

V. INDIAN TETRIGINAE (ACRYDIINAE).

By J. L. HANCOCK.

(Plate xiv.)

Several months ago the extensive collection of these small Orthoptera in the Indian Museum was placed in my hands for study by Dr. N. Annandale, Superintendent of the Museum. At the time I received the collection Dr. Annandale stated in a letter that: "a large proportion of the collection was named by the late Mr. Kirby just before his death, and I am sending these specimens also." A considerable number of the remaining specimens, not seen by Mr Kirby, were named by Saussure and others. I find after going over the collection that the part examined by Mr. Kirby bears evidence that he had not passed final judgment on many of the specimens. This is shown from a number of cases where a hastily written label, with a specific name, is attached to one insect among a series containing from one to several species, so that the remaining ones were left undetermined.

The Indian Museum collection contains such a large percentage of the described species of the Indian Empire, besides so many new ones, that I concluded to give a review of the recorded Indian species of this Orthopteran family. I have given a synopsis of the subfamilies, and the genera; and in most cases in the large genera I have given tables for the separation of species. The literature of all the species has been added but in conjunction with this part Kirby's remarkable Catalogue of Orthoptera, Volume III, will be found invaluable for reference. The latter, however, includes the literature only to the end of 1898. Since then, a number of Indian species have been described, which are recorded in the present paper. Included at the end are some species in the Indian Museum outside the Indian Empire. Those from Ceylon are for the sake of convenience incorporated in the text with the Indian species.¹

Synoptical Table of Subfamilies and Genera of India.

1. Antennae with all the articles excepting
the basal and the small atrophied apical

¹ As the proofs of this article come to hand I find that Kirby's volume on Orthoptera has just been published in the "Fauna of British India" 1914. It refers to a number of Tettigid species described in the present paper, and in order to clarify the confusion that may arise from the difference in determinations the names given by Kirby, and those that I have applied, are placed in parallel columns on p. 132 of this article.

articles deplanate triquitrous, composed of eight to ten joints; vertex transverse, very broad, or strongly acuminate produced

TRIPETALOCERINAE.

1. Gen. *Birmana*, Brunn.

1. 1. Antennae filiform.
2. Anterior femora more or less compressed carinate above.
3. Frontal costa widely forked, the rami forming a frontal scutellum .. CLADONOTINAE.
4. Pronotum extremely compressed, above wholly foliaceous .. 2. Gen. *Oxyphyllum*, Hanc.
4. 4. Pronotum acute tectiform, anteriorly angulate 3. Gen. *Dellonotus*, Hanc.
5. Dorsum of pronotum bearing a ramose process; body and legs ornate with spiniform tubercles .. 4. Gen. *Cladonotus*, Sauss.
5. 5. Dorsum of pronotum not at all ornate with a ramose process.
5. 5a. Elytra and wings wanting.
6. Posterior angles of the lateral lobes of pronotum widely laminate expanded, erose, and produced in spiniform tubercles; pronotum truncate anteriorly, dorsum fossulate-reticulate, between the shoulders cristulate .. 5. Gen. *Tettilobus*, Hanc.
6. 6. Posterior angles of the lateral lobes of pronotum laminate obliquely truncate behind, setose; dorsum compressed gibbose between the shoulders, posteriorly abbreviated, the apex truncate-emarginate 6. Gen. *Gignotctlix*, Hanc.
5. 5b. Elytra minute; wings wanting; median carina of pronotum cristulate. 7. Gen. *Potua*, Bolivar.
3. 3. Frontal costa fureillate, but the rami diverge only moderately, or parallel, very frequently separated by a sulcus.
7. Pronotum truncate anteriorly, posterior angles of the lateral lobes of pronotum laminate produced outwards, acute, or posteriorly obliquely truncate, rarely turned down.
8. Posterior angles of the lateral lobes of the pronotum acute produced outwards often spined; the first joint of the posterior tarsi longer than the third; posterior tibiae strongly ampliate, or marginus dilated toward the apices; very frequently not or sparingly spinose .. SCRLIMENINAE.

9. Antennae inserted slightly or distinctly below the eyes.
10. Margins of hind tibiae strongly expanded, the first joint of the posterior tarsi dilated and much wider than the third.
11. Paired ocelli placed nearly between the lower third of the eyes; anterior and middle femora very narrow elongate; posterior angles of the lateral lobes of the pronotum turned down but the margin on each side armed with a straight more or less cylindrical sharp spine 8. Gen. *Amphibotettix*, Hanc.
11. 11. Paired ocelli placed nearly on a line with the lower border of the eyes; humeral angles of pronotum unarmed; posterior angles of the lateral lobes laminate and on each side produced in a curved spine; hind tibial margins distinctly membranous expanded 9. Gen. *Scelimena*, Serv.
10. 10. Margins of posterior tibiae little expanded; first joint of hind tarsi not widely expanded; but little wider than the third, rarely narrow.
12. Stature large, body prolongate.
13. Pronotum with the dorsum often lightly gibbulate and fossulate; humeral angles often armed with denticles or tubercles; vertex unarmed; margins of hind tibiae bearing minute denticles 10. Gen. *Eugavialidium*, Hanc.
13. 13. Pronotum with the dorsum distinctly deplanate, more or less reticulate punctate; vertex armed on each side with an elevated tubercle; margins of hind tibiae serrulate 11. Gen. *Gavialidium*, Sauss.
12. 12. Stature moderate not so prolongate.
14. Vertex very narrow, often one half the width of one of the eyes or even narrower; head exserted; posterior angles of the lateral lobes of the pronotum either unarmed, angulate and prominent or produced in a spine on each side. 12. Gen. *Bolotettix*, Hanc.
14. 14. Vertex equal to or wider than one of the eyes; pronotum above rugose tuberculate; lateral carinae behind the humeral angles compressed sinuate; median carina gibbose 13. Gen. *Thoradonta*, Hanc.
9. 9. Antennae inserted between the lower part of the eyes.

15. Vertex narrower or subequal to one of the eyes.
16. Head lightly exerted; posterior angles of the lateral lobes of the pronotum prominent, acute, or produced in a spine more or less transverse, or directed obliquely forward .. 14. Gen. *Criotettix*, Bol.
16. 16. Head not at all exerted; frontal costa roundly produced in advance of the eyes; posterior angles of the lateral subspiniform produced, or oblique and obtuse .. 15. Gen. *Loxilobus*, Hanc.
15. 15. Vertex as wide or wider than one of the eyes.
17. Dorsum of pronotum little rugose, or rugulose; head not at all exerted; eyes not elevated; antennae short; spine on each side of the lateral lobes of pronotum obliquely directed backward. 16. Gen. *Acanthalobus*, Hanc.
17. 17. Dorsum of pronotum subsmooth, punctate, spine on each side of the lateral lobes directed obliquely forward and curvate 17. Gen. *Tettitellum*, Hanc.
8. 8. Posterior angles of the lateral lobes of the pronotum little produced outwards, obliquely truncate behind, very rarely acute spinose; first and third joints of the hind tarsi nearly equal in length .. METRODORINAE.
18. Head distinctly exerted; vertex very narrow, the eyes strongly approximated and elevated 18. Gen. *Systolederus*, Bol.
18. 18. Head little exerted; lateral lobes with the inferior margins widely and roundly dilated; posterior angles behind transversely widely truncate; vertex very narrow; stature small, apterous. 19. *Eurymorphopus*, Hanc.
19. Vertex strongly produced, median carina prominently projecting from the front border; in profile acute angulate produced; face strongly oblique; frontal costa sinuate between the eyes. 20. Gen. *Spadotettix*, Hanc.
19. 19. Vertex little produced, in profile obtuse angulate; body apterous. 21. Gen. *Apterotettix*, Hanc.
20. Body very small, apterous; vertex very wide and not advanced as far as the front border of the eyes; pronotum sub-tectiform forward, deplanate posterior-

- ly, hind process abbreviated, apex truncate; first joint of hind tarsi much longer than the third . . . 22. Gen. *Amphinotus*, Hanc.
20. 20. Body larger, moderately crassate; vertex wider than one of the eyes; first and third articles of the hind tarsi equal in length; paired ocelli placed little below the middle of the eyes; posterior angles of the lateral lobes of the pronotum straight or obtuse, behind widely truncate 23. *Mazarredia*, Bol.
21. Body narrow elongate; posterior angles of the lateral lobes of pronotum subrounded; vertex cuspidate on each side or elevated styliform Gen. 24. *Xistra*, Bol.
22. Posterior angles of the lateral lobes of pronotum not at all produced outwards, narrowed, toward the apex rounded; pronotum between the shoulders strongly elevated in an obtuse gibbosity. 25. Gen. *Xistrella*, Bol.
22. 22. Posterior angles of the lateral lobes of pronotum laminate, prominent, acute produced or obliquely truncate; median carina of the pronotum and the disc on either side bearing gibbosities. 26. Gen. *Lamellitettix*, Hanc.
21. 21. Body strongly crassate; vertex wider than one of the eyes, imperfectly marginate; eyes more or less conoidal in form, antennae inserted between the lower part of the eyes; lateral lobes of the pronotum with the posterior angles laminate dilated, widely truncate behind, prominent subacute, or rarely not reflexed outward, obliquely truncate behind 27. Gen. *Hyboella*, Hanc.
7. 7. Pronotum anteriorly truncate, or rarely angulate produced; posterior angles of the lateral lobes of pronotum turned down, more or less rounded; first articles of the hind tarsi longer than the third TETTIGINÆ.
23. Vertex viewed in profile not at all produced.
24. Vertex very narrow, strongly narrowed forward drawing the eyes near together in front; eyes not elevated; pronotum above smooth, carinae not at all elevated 28. Gen. *Terederus*, Hanc.

24. 24. Vertex narrower than one of the eyes, anteriorly truncate; frontal costa often sinuate between the eyes; pronotum granulate or little rugose, the carinae little compressed elevated; first article of the posterior tarsi longer than the third 29. Gen. *Paratettix*, Bol.
23. 23. Vertex viewed in profile produced before the eyes, angulate, viewed from above wider than one of the eyes, not at all narrowed forward .. 30. Gen. *Acrydium*, Geoffr.
25. Antennae inserted between the eyes, slender filiform.
26. Pronotum above little rugose, often bearing round or abbreviated lineate tubercles; frontal costa arcuate or roundly produced between the eyes; body moderately slender; vertex narrowed forward, fossulate on each side 31. Gen. *Coptotettix*, Bol.
26. 26. Pronotum above granulate, or barely punctate, rarely rugose; median carina of pronotum percurrent, not at all interrupted 32. Gen. *Hedotettix*, Bol.
- 25 25. Antennae inserted between the lower border or angles of the eyes or below the eyes.
27. Head more or less exserted; frontal costa arcuate produced between the middle of the eyes; vertex narrower than one of the eyes and truncate; paired ocelli placed nearly on a line with the middle of the eyes. 33. Gen. *Euparatettix*, Hanc.
27. 27. Head distinctly exserted; paired ocelli placed between the lower third of the eyes; antennae inserted below the eyes; frontal costa little arcuate elevated between the antennae, but not above between the middle of the eyes; median carina of pronotum often undulate or sinuate; hind process with the lateral carinae toward the apex entire or frequently minutely crenulate, or bearing very small dilated lobes. 34. Gen. *Indatettix*, Hanc.
2. 2. Anterior femora above distinctly sulcate; pronotum anteriorly produced over the head in a cornute process; antennae having sixteen to twenty-two articles. BATRACHIDINAE.
35. Gen. *Saussurella*. Bol.

TRIPETALOCERINÆ.

Genus *Birmana*, Brunner.

Brunner, Ann. Mus. Genova, xxxiii, p. 113, 1893.

Hancock, Gen. Ins. Orth. Acrid. Tetr., p. 4, 1906.

Birmana gracilis, Brunner.Brunner, Ann. Mus. Genova, xxxiii, p. 114, pl. 5, fig. 47,
1893.Habitat.—Burma. Not represented in the material under
consideration.

CLADONOTINÆ.

Genus *Oxyphyllum*, Hancock.

Hancock, Trans. Ent. Soc. London, p. 393, 1908.

Oxyphyllum pennatum, Hancock.Hancock, Trans. Ent. Soc. Lond., pp. 393, 394, pl. xxii, fig. 3,
1908.

Habitat.—Darjiling, India. Not in the present collection.

Genus *Deltonotus*, Hancock.*Deltonotus subcullatus*, Walker.*Tettix subcullatus*, Walk., Cat. Derm. Salt. Brit. Mus., V, p.
830, 1871.*Deltonotus tectiformis*, Hancock, Spol. Zeylau., ii, p. 154, pl. i,
fig. 2, 1904.

Hanc., Gen. Ins. Orth. Acrid. Tetr., p. 14, pl. i, fig. 1, 1906.

Habitat.—Kandy, Ceylon, June 12, 1900; one example, Ind.
Mus. coll.*Deltonotus gibbiceps*, Bolivar.*Poecilotettix gibbiceps*, Bol., Ann. Soc. Ent. France, lxx, p. 580,
1902.*Deltonotus gibbiceps*, Hanc., Gen. Ins. Orth. Acrid. Tetr.,
p. 14, 1906.

Habitat.—Madura. Not in the present collection.

Genus *Cladonotus*, Saussure.The three described species of this Ceylonese genus may be
distinguished by the following table:—

- I. Pronotal cornu curved forward at the
middle, and furcate at the apex *humbertianus*, Saussure.
- I. I. Pronotal cornu not distinctly curved
forward.

2. Cornu obliquely ascendant, truncate, and dentate in front and behind . . . *turrifer*, Walker.
 2. 2. Cornu nearly vertically ascendant, dentate in front and distinctly broadened toward the apical half . . . *latiramus*, Hancock.

Cladonotus humbertianus, Saussure.

Sauss., Ann. Soc. Ent. France, i, p. 478, 1861; Bolivar, Ann. Soc. Ent. Belg., xxxi, p. 209, pl. 4, fig. 10. 1887; Hanc., Spol. Zeylan., ii, p. 113, 1904.

Habitat.—Ceylon

Cladonotus turrifer, Walker.

Walker, Cat. Derm. Salt. Brit. Mus., p. 843, 1871.

Habitat.—Ceylon.

Cladonotus latiramus, Hancock.

Hanc., Spol. Zeylan., ii, p. 114, pl. i, fig. 1, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetr., p. 16, pl. i, fig. 3, 1906.

Habitat.—Ceylon. Author's coll.

Genus **Tettilobus**, Hancock.

Tettilobus spinifrons, Hancock.

Hanc., Trans. Ent. Soc. London, pp. 396, 397, pl. xxii, fig. 4, 1908.

Habitat.—Ceylon. Not in the present collection.

Tettilobus pelops, Walker.

Cladonotus pelops, Walk., Cat. Derm. Salt. Brit. Mus., p. 843, 1871.

Habitat.—Ceylon. Not in the present coll.

Genus **Gignotettix**, Hancock.

Gignotettix burri, Hancock.

Hancock, Trans. Ent. Soc. Lond., p. 398, pl. xxii, fig. 5, 1908.

Habitat.—Ceylon. Not in the present coll.

Genus **Potua**, Bolivar.

Potua sabulosa, sp. nov.

Body very small, rugose scabrous; ferruginous. Head not at all exserted: face large; eyes moderately small, not prominent, subconoidal in profile. Vertex rugose, distinctly wider than one of the eyes, the frontal carinulae laterally rounded and little ele-

vated on each side, subhigher than the eyes, fossulate on each side, the short median carina little produced. Pronotum anteriorly truncate; median carina of the pronotum strongly elevated forward in a compressed gibbosity, reaching from the front border to the humeral angles, rounded forward and abruptly sloping backward; behind the humeral angles elevated in a lower second gibbosity, posteriorly tuberculate; disc little elevated at the middle and bearing a short oblique gibbulate carina on each side, behind the shoulders depressed; posterior process abbreviated, extended to the knees of the hind femora, and above strongly rugose-tuberculate; elytra minute, elongate; wings wanting; posterior femora stout, externally scabrous and obtuse tuberculate; margin below curvate and subtuberculate-rose; the three pulvilli of the first joint of the hind tarsi subequal in length.

Entire length of male 6.5 mm; pronotum 5 mm.; posterior femora 3.8 mm.

Habitat.—Yenna Valley, Satara Dist., Bombay Pres., 2500–3500 ft., Apr. 17, 1912 (*F. H. Gravely*).

SCELIMENINAE.

Genus *Amphibotettix*, Hancock.

Hancock, Ent. News, xviii, p. 86, 1906; Hanc., Gen. Ius. Orth. Acrid. Tetr., p. 22, 1906.

Amphibotettix rosaceus, sp. nov.

Allied to *A. longipes*, Hancock, but larger in stature, the spines of the pronotum being little stouter and not quite so long produced. Body coloured fuscous or black, the sides of the pronotum and dorsum obscurely suffused with rose, the lateral carinae forward, the tubercles and the spines of the lateral lobes bright rose colour. Head scarcely at all exerted; eyes slightly elevated and strongly globose. Vertex narrower than one of the eyes, narrowed forward, not advanced as far as the eyes; frontal costa protuberant between the antennae, produced little beyond the eyes; antennae inserted below the eyes; lower part of face strongly obliquely retreating. Pronotum deplanate above, strongly elongate, irregularly depressed forward before the shoulders at the sulci, transversely fossulate behind the shoulders, lengthily produced backward beyond the apices of the hind femora; dorsum rather smooth, minutely granulate, between the shoulders little elevated, behind the shoulders bearing a pair of obtuse subcarinated nodes, and further backwards on base of process presenting another pair of very obtuse rounded nodes; humeral angles bicarinate, hind process above subrounded; median carina of pronotum very low, following the inequalities, and forward near the convex margin turned upward but not produced in a tubercle, yet very slightly subtuberculate; lateral carinae on the shoulders obscurely subtuberculate and marked with rose colour in the type, the late-

ral carinae before the shoulders on each side forward near the sulci terminating in a rose-coloured spot; sides of pronotum at the front of lateral lobes produced on each side in a tubercle; posterior angles of the lateral lobes turned down not at all laminate, the lateral margins just before the angles outwardly produced in an acute strong spine on each side, directed obliquely forward and little curvate toward the apex. Elytra moderately wide at the base and distinctly narrowed acuminate backward to the apices, externally strongly impresso-punctate; wings extended nearly to the apex of the process. Anterior and middle femora strongly elongate and narrow, margins of the anterior above subbicrenulate toward the base; middle femoral margins above subundulate; hind femora slender elongate; carinae of posterior tibiae strongly dilated; the first joints of the hind tarsi strongly membranous expanded; the first and second pulvilli small subacute, and widely separated, dividing the article into thirds, the third pulvilli strongly obtuse and planate below.

Entire length of body, male, 25 mm.; pronotum 24 mm.; post. femora 8 mm.

Habitat.—Thingannyinaung to Sukli, Dawna Hills, Tenasserim, 900–2100 ft. elevation, Nov. 23, 1911 (*F. H. Gravely*). One example, Ind. Mus. coll.

This species differs from *Scelimena sanguinolenta*, which also has rose-coloured spines, in being longer, and the lateral spines are not so long produced. The new species is devoid of the median produced tubercle at the front of the pronotum, which is styliform and strongly produced in *longipes*. From the latter species it also differs in the legs being less attenuate, though very slender, and in the lateral spines being less cylindrical.

Genus *Scelimena*, Serville.

Table for distinguishing the Indian species.

1. Vertex narrower than one of the eyes, narrowed forward.
2. Humeral angles not at all provided with evident denticles.
3. Lateral lobes of the pronotum bearing one spine only on each side.
4. Spine on each side of the lateral lobes triangular acute and straight, the apex sharp, not at all curvate, coloured yellow; vertex very narrow; dorsum convex between the shoulders; body more or less fuscous or greyish-fuscous marked with yellow *harpago*, Serville.
4. 4. Spine on each side of the lateral lobes of pronotum produced, slender, and hooked forward, often bright rose-coloured or coral red *gavialis*, Saussure.

3. 3. Lateral lobes of pronotum provided with one spine and a tubercle on each side, the latter placed just before the spine of the posterior angles; body often greyish-fuscous marked with yellow; inferior margins of femora very strongly dentate *logani*, Hancock.
1. 1. Vertex not quite so narrowed forward.
2. 2. Humeral angles barely behind the apices and also the lateral carinae forward before the shoulders on each side slightly compressed obtuse denticulate; pronotal process strongly produced backward beyond the hind tibial apices; spine on each side of the lateral lobes posteriorly slender, sharp and curvate forward . . . *spinata*, sp. nov.
Body six millimetres (species probably described from larva or pupa?) .. *uncinata*, Serville.

The above representatives fall into the series of species having the hind tibial margins distinctly membranous expanded, and the first joint of the hind tarsi similarly strongly dilated; the pronotum between the shoulders convex, not so distinctly deplanate as in *Eugavialidium*, Hanc.; the front margin of the pronotum entire, or provided only with very small front tubercles, not at all produced, placed on either side of the lateral front margin of the lobes; the paired ocelli placed low between the eyes yet somewhat higher than in the latter genus; the vertex narrower than one of the eyes or at most subequal; the apex of the pronotum bifid and the hind femoral margins below strongly dentate.

Scelimena harpago, Serville.

Tetrix harpago, Serv., Ins. Orth., p. 763, 1839; DeHaan Temminck. Verhand., Orth., p. 161, 1842; Bol., Ann. Ent. Belg., p. 217, pl. 4, fig. 13, 1887.

Habitat.—Igatpuri, W. Ghats, Bombay Pres., Nov. 21, 1909; Medha, Satara Dist., Oct. 22, 1912 (*N. Annandale*): Kasara, W. base of West Ghats, Bombay Pres., Nov. 23, 1899; Datar Hill nr. Junagadh, Kathiawar, "in or near a stream" (*S. P. A.*), Nechal, W. Ghats, Satara Dist., 2000 ft. (*F. H. Gravely*): Medha, Yenna Valley, Satara Dist., 2100 ft., Apr. 17, 1912 (*F. H. Gravely*): Tambi, Koyna Valley, Satara Dist., 2100 ft., Mar. 24, 1912 (*F. H. Gravely*).

Most of the specimens are dark or fuscous on the dorsum; some have a greyish-fuscous cast, while several are suffused with reddish-ochre on the pronotum. There is one male of the latter colour from Medha which is very much smaller in stature, the entire length being 16 mm., the pronotum 14.7 mm. It has all the characters of the normal-sized individuals. The average male and

female in the present series measures : entire length 19-22.5 mm. ; the pronotum 18-21 mm. Serville (*l. c.*) gives the entire length of male and female as 21 mm.

Scelimena gavialis, Saussure.

Scelymena gavialis, Sauss., Ann. Soc. Ent. France, iv, p. 845, 1861; *Scelymena nodosa*, Walker, Cat. Derm. Salt. Brit. Mus., p. 840, 1871; *Scelimena gavialis*, Hancock, Spol. Zeylan., ii, p. 154, pl. i, fig. 4, 1904.

Habitat.—Labugama, W. P. Ceylon (Hancock coll.); Madulima, Ceylon (*T. B. Fletcher*, Hancock coll.). Ind. Mus. coll.

This black species has the pronotum in front, the tip of the hind process, and the lateral spine on each side bright coral-red. In the Ceylonese species *logani*, Hanc., the coral-red is replaced with yellow, and the posterior angles of the lateral lobes of the pronotum are armed on each side with a spine and a denticle as indicated in the table.

Scelimena ? *producta*, Brunner.

Brunner reports this species from Carin Cheba in Rev. Syst. Orth., p. 103, 1893, and the previously reported habitat of this species is Java. The female representative which Brunner referred to, is much larger than the typical *S. producta*, Serville, and I think it is the species which I have described as *Eugavialidium discalis*, Hancock.

Scelimena spinata, sp. nov.

Near *Scelimena harpago*, Serv. Body above on the pronotum ferruginous and greyish-fuscous, often more reddish on the disc, marked with ochre or yellow, the femoral denticles below light yellow. Vertex toward the front narrower than one of the eyes, not so distinctly narrowed forward as in *gavialis*, widened backward between the eyes; paired ocelli placed between the lower part of the eyes; antennae inserted distinctly below the eyes; frontal costa protuberant between the antennae. Pronotum truncate anteriorly, the front margin devoid of produced tubercles, but the lateral margins below the eyes bearing a minute tubercle, subelevated, on each side; dorsum rather smooth, not at all deeply fossulate, between the shoulders convex, the disc before the shoulders bearing two short supernumerary carinulae and minute side offshoots forward; behind the disc depressed, and on the dorsum above the hind femora bearing two pairs of very low nodes more or less carinated, the hind pair longer and nearer together; median carina of pronotum very low, thin, and percurrent; lateral carinae extended forward but less distinct on the shoulders, and barely behind the apices of the humeral angles the margin little compressed obtuse dentate; the lateral carinae at the terminus forward subdentate; hind process very long pro-

duced backward beyond the apices of the extended hind tibiae, the apex bifid; posterior angles of the lateral lobes turned outwards and produced in a moderately strong spine distinctly curved forward. Elytra moderately wide, elongate, the distal fourth narrowed to the apices and angulate, externally impresso-punctate; wings fully explicate, extended backward to the apex of the pronotal process. Anterior femora little compressed elongate, margin above little compressed at the basal half, and bearing a small subacute tubercle, below bidentate; middle femora above undulate, below acute bidentate; posterior femora moderately stout, the superior carina crenulate and bearing an acute antegenicular denticle, below strongly dentate, often quadridentate, the three denticles at the middle strongly produced spinose; hind tibial margins and first joint of posterior tarsi widely expanded, the first two pulvilli acute and placed backward leaving a wide basal space, the three pulvilli subequal in length.

Entire length male and female 21.7 mm.; pronotum 21-25 mm.; post. femora 9 mm.

Habitat.—Trevandrum, Travancore, Aug. 1890; Kellar, Travancore; Trevandrum State. Ind. Mus. coll.

Scelimena uncinata, Serville.

Tetrix uncinata, Serv., Hist. Nat. Ins. Orth., pp. 763, 764, 1893; *Scelimena uncinata*, Bol., Ann. Soc. Ent. Belg., xxxi, p. 218, 1887.

Judging from the description of this questionable species which has a length of only six millimetres, it appears that the type was a larva or pupa. This leaves the identity of the species in doubt. The type came from Bombay. In the Indian Museum collection are two specimens from Sibsagar, N. E. Assam, which are labelled *Scelimena uncinata*, Serville, by Saussure. These are pupa of some species near *Eugavialidium india*, Hanc.

Genus *Eugavialidium*, Hancock.

The members of this genus have the paired ocelli placed between the extreme lower part of the eyes; the dorsum of pronotum deplanate, the front margin of the pronotum more or less ornate with denticles or tubercles, often armed with a produced tubercle at the middle above the occiput, or when absent there, they appear in front on either side of the lateral lobes; the femoral margins more or less tuberculate; the lateral carinae on either side of the shoulders often tuberculate or dentate, and the median carina of the pronotum sometimes tuberculate; the hind process strongly prolonged backward beyond the hind femoral apices; the margins of the hind tibiae and first joint of the posterior tarsi moderately expanded, but not so strongly membranous dilated as in *Scelimena*; the lateral lobes have the posterior angles outwardly produced, acute, triangular, or on either side bearing a spine often curved forward.

Table separating the Indian species and one from China.

1. Posterior angles of the lateral lobes of pronotum produced in a sharp spine more or less distinctly curvate forward.
2. Lateral carinae on each side of the disc of dorsum provided with more than one distinct denticle.
3. Lateral carinae on each side of dorsum including hind process ornate with many small denticles throughout; dorsum bearing distinctly elevated nodes; pronotum of female 21 mm .. *multidentatum*, sp. nov.
4. Dorsum of pronotum somewhat smoother.
3. 3. Lateral carinae on each side of disc of dorsum provided with denticles, and often tuberculate backward as far as the base of process only; hind process very long produced; median carina of pronotum not at all tuberculate over occiput at the front margin; pronotum of female 29.5 mm. .. *discalis*, sp. nov.
2. 2. Lateral carinae on each side of disc of dorsum entire, not at all dentate, but pale bimaculate, or very indistinctly subtuberculate; body and legs often adorned with yellow spots: front margin of pronotum bearing a tubercle on each side below the eyes, and one at the middle above the occiput; pronotum of female 19.5 mm. .. *indicum*, Hancock.
4. 4. Dorsum above rugose, reticulate; front margin of pronotum at the middle over the occiput and on each side below the eyes ornate with a tubercle; humeral angle on each side bearing a small pale denticle; pronotum strongly prolongate: pronotum of female 29 mm. *chinensis*, sp. nov.¹
1. 1. Posterior angles of the lateral lobes of pronotum more or less triangular or acute produced, straight, not at all curvate.
5. Lateral lobes of pronotum with the posterior angles slender spiniform produced; anterior border of pronotum on each side bearing three tubercles, but the middle of dorsum over the occiput

¹ For description of this Chinese species, see report of species outside of India at the end of this paper.

- not tuberculate ; lateral carinae on each side of disc forward bidentate, the denticles at the humeral angles obtuse crenulate ; pronotum of female 22.8 mm. *kempfi*, sp. nov.
5. 5. Lateral lobes of pronotum with the posterior angles little prominent, triangular, not aculeate.
6. Anterior border of the lateral lobes of pronotum dentate ; humeral angles very obtuse crenulate, provided with a pale tubercle on each side ; longitudinal carinae ornate with pale crenules ; pronotum of female 17 mm. *birmanicum*, Brunner.
6. 6. Anterior border of the lateral lobes of the pronotum entire, not at all dentate but rounded ; humeral angles obtuse and acute marginate ; posterior angles of the lateral lobes of pronotum produced in an acute triangular lobe, profoundly abruptly sinuate behind ; pronotum of male 17 mm. *faec*, Bolivar.
7. Pronotum bearing large tubercles on the disc ; humeral angles obtuse, provided with abbreviated external carinulae ; dorsum with two tubercles behind the humeral angles, and four at the middle of the process ; posterior angles of the lateral lobes produced, but not at all spinose, margin behind with a profound subrectangular sinus ; pronotum of female 19.5 mm. *flavopictus*, Bolivar.
7. 7. Pronotum not bearing elevated tubercles on the disc.
8. Dorsum above smooth punctate, little subreticulate ; humeral angles very obtuse ; median carina little elevated, percurrent, tuberculate in front at the middle over occiput ; lateral and median carina not at all appreciably tuberculate ; margins of first joint of posterior tarsi somewhat dilated ; pronotum of female 21.7 mm. *angulatum*, sp. nov.
8. 8. Dorsum very lightly rugose, coarsely granulose ; median carina bearing three small tubercles forward before the humeral angles and tuberculate backward in a subindistinct series to the base of process ; lateral carinae subindistinctly bituberculate on each side

of shoulders and barely subtuberculate backward to base of process; margins of first joint of hind tarsi not at all expanded; pronotum of male 19 mm. *saussurei*, sp. nov.

Eugavialidium multidentatum, sp. nov.

Near *E. birmanicum*, Brunner. Body and legs marked with fuscous and yellow, and yellow tubercles dot the course of the lateral carinae throughout each side of the dorsum, the three tubercles in front yellow, the spines of the lateral lobes pinkish-yellow, and underneath the body darker pinkish-yellow. Head not at all exserted, eyes globose; vertex subwider than one of the eyes; paired ocelli placed between the extreme lower part of the eyes; antennae long, very slender filiform, inserted distinctly below the eyes; frontal costa protuberant between the antennae. Pronotum deplanate, strongly inequal; median carina of pronotum irregularly undulate, and at the front margin terminating in a produced elevated tubercle; dorsum minutely punctate or bearing pale granulations, between the shoulders on the disc provided with short elevated subcarinate tubercles, behind the shoulders depressed, and above the apices of the elytra on each side of the dorsum provided with an elevated subcarinate boss, further backward on base of process bearing two elongate elevated nodes; hind process acuminate, subrounded above toward the apex, but flattened forward toward the base; lateral carinae throughout on each side dotted with a series of small and rather widely separated obtuse denticles, the one at the humeral angle scarcely more distinct and obtuse, and those backward toward the apex becoming smaller and less distinct, but marked by minute pale maculae; lateral lobes at the front margin produced in a denticle on each side; the posterior angles produced in a strong spine slightly curvate forward and moderately broad at the base; elytra acuminate toward the apices; wings extended to or barely beyond the apex of the hind process. Anterior femoral carinae above subtuberculate, two toward the base often subacute, margins below bituberculate; middle femora above subtrilobate, below bidentate; posterior femoral carinae above indistinctly minutely trilobate, below provided with small obtuse denticles very slightly produced; margins of hind tibiae sparingly minutely dentate on outer margins, the margins moderately expanded; the first articles of the posterior tarsi moderately expanded, the three pulvilli nearly equal in length.

Entire length of female 20.5-22.5 mm.; pronotum 19.5-21.5 mm.; post. femora 8.5 mm.

Habitat.—Sukli, east side of Dawna Hills, 2100 ft., Nov. 22, 1911 (*F. H. Gravely*); Dawna Hills, 2000-3000 ft., Tenasserim, Mar., 1909 (*N. Annandale*).

This species may be distinguished from *E. birmanicum*, Brunner, by the curvate spines of the lateral lobes; the longer pro-

notum, and the shorter hind femora, the tuberculate margins of the femora, and the dentate lateral carinae of the pronotum. In *birmanicum* the longitudinal carinae are ornate with pale crenules, and the humeral angles are provided with a pale obtuse tubercle on each side, the lateral spines straight and triangular, not at all aculeate.

Eugavialidium discalis, sp. nov.

Near *Scelimena producta*, Serville. Colour greyish-ferruginous. Vertex wider than one of the eyes, scarcely at all narrowed forward; eyes little prominent, subsessile, viewed from above reniform, from the side globose; paired ocelli placed between the extreme lower angles of the eyes: antennae inserted far below the eyes; frontal costa protuberant between the antennae. Pronotum truncate anteriorly; the front margin on either side of the lateral lobes bearing a produced tubercle, not tuberculate at the middle above the occiput; dorsum deplanate, between the shoulders on the disc bearing low, short, lineate tubercles, depressed behind the shoulders, and backward provided with four very low obtuse nodes; median carina very low; lateral carinae on each side bearing a series of denticles often placed as far back as the base of the hind process but here very minute; humeral angles ornate with a distinct obtusely elevated tubercle on each side; the denticles or tubercles each side of the forward disc larger than those backward; hind process lengthily produced backward beyond the apices of the extended hind tibiae; posterior angles of the lateral lobes produced in a curved spine on each side, strongly produced in the male, rather stout in the female. Elytra elongate, acuminate, externally impresso-punctate; wings extended backward almost to the apex of process. Anterior femora elongate, margins crenulate, above undulate and compressed-sublobate toward the base, below subtri-tuberculate; middle femora above subtrilobate, below subbituberculate; hind femora elongate, the superior carinae crenulate and more or less quadricompressed, with two acute denticles toward the knees, margins below often quadridentate but little produced; hind tibial margins and first joint of the hind tarsi moderately expanded, but not so widely dilated as in typical *Scelimena*; inner margins of hind tibiae entire; the first and second pulvilli of the first joint of posterior tarsi small, acute, more widely separated than the second and third.

Entire length of male and female 25-30.5 mm.; pronotum 24-29.5 mm.; hind femora 7-9 mm.

Habitat.—Sibsagar, N.-E. Assam (*S. E. Peal*); Upper Assam (*Doherty*).

This species differs from *Scelimena producta*, Serville, in the larger stature, and in being wider between the shoulders, in the dentate humeral angles and lateral carinae of pronotum, and in the tuberculate femora. It is readily distinguished when it is compared with a series of *S. producta*, Serv., from Java.

Eugavialidium indicum, Hancock.

Scelimena idia, Hanc., Trans. Ent. Soc. London, p. 219, 1907; Hanc., Rec. Indian Museum, viii, p. 311, 1913.

Habitat.—Assam (*H. H. G. Austen*).

The type in the author's collection is from Cherrapungi, Assam. The type is conspicuously ornate with small yellow spots forward on the greyish-fuscous dorsum, and also on the legs; the median carina of the pronotum at the front bears a tubercle; the lateral carinae of the dorsum of pronotum are not furnished with denticles or tubercles; the lateral lobes at the front under the eyes bear a tubercle on each side; the spines of the posterior angles of the lateral lobes are little curvate forward at the apices and more slender in the male; disc of the pronotum above provided on each side with a more or less distinct short branching carinula. In the specimens in the Indian Museum collection the bright yellow maculae are more or less obscured; the hind femora are missing, but in the type the hind tibiae and first joint of the posterior tarsi show moderate expansion of the margins but not nearly so strongly dilated as in typical *Scelimena*; the outer margins of the hind tibiae bear small acute denticles. In the two females in the Indian Museum the pronotum measures 20 and 22 mm. in length.

Eugavialidium kempi, sp. nov.

Near *E. birmanicum*, Brunner. Greyish-fuscous, yellow maculate, pronotal process suffused with, and spotted with chrome yellow. Vertex little wider than one of the eyes. Pronotum at the front border trituberculate, but the middle of the dorsum behind the occiput not at all tuberculate; median carina of pronotum irregularly compressed, spotted with yellow; just behind the sulci, and behind the shoulders gibbulate; dorsum fossulate behind the shoulders, on either side above the base of the hind femora obtuse nodulose, and further backward bearing a pair of elevated nodes; lateral carinae subcompressed and on each side of disc at the humeral angles and before the angles bearing a pale yellow denticle, backward yellow maculate; anterior and middle femora slender elongate, margins of anterior femora above subentire, bearing one very small tubercle, below subentire or bearing two minute tubercles; middle femora yellow maculate, and subtrilobate above, below subbituberculate; hind femora elongate, superior margin crenulate and above the middle and at the distal fourth subacute dentate, below subentire.

Entire length of female 23.5 mm.; pronotum 23 mm.; post. femora 8.7 mm.

Habitat.—Above Panji, 4000 ft., "Rebang stream under stones" (*Kemp*).

This species was mistaken for females of *E. indicum*, Hancock, in my former paper in the Records of the Indian Museum, VIII, p. 311, 1913. I have since examined two females of *E. indicum*, which are mentioned under the preceding heading. In *E. kemp*i

the posterior angles of the lateral lobes of the pronotum are produced outwards on each side in a straight narrow spine, whereas in *E. indicum* the spine on each side of the lateral lobes is curvate forward. In *E. birmanicum* the posterior angles are triangularly produced, not aculeate, and the body is shorter.

***Eugavialidium birmanicum*, Brunner.**

Gavialidium birmanicum, Brunn., Ann. Mus. Genova xxxiii, p. 104, pl. 5, fig. 37, 1893; Hanc., Gen. Ins. Orth. Acrid. Tetr. *E. birmani* (cum), p. 25, 1906.

Habitat.—Burma (*Brunner*).

***Eugavialidium feae*, Bolivar.**

Bol., Real. Soc. Espan. Nat. Hist., ix, p. 396, 1909.

Habitat.—Carin Cheba (*Bolivar*).

***Eugavialidium flavopictum*, Bolivar.**

Bol., Real. Soc. Espan. Nat. Hist., ix, pp. 394, 395, 1909.

Habitat.—Calcutta, India (*Bolivar*).

***Eugavialidium angulatum*, sp. nov.**

Colour ochreous. Vertex subequal in width to one of the eyes, on either side dentate but not elevated above the eyes; dorsum of pronotum plain, punctate, and minutely subreticulate; between the shoulders provided with a short elevated line or ruga on each side; humeral angles very obtuse-convex; the lateral and median carinae unarmed, not at all tuberculate; median carina little elevated subgibbose at the sulci forward and terminating in front over the occiput in a tubercle; prozonal carinae forward behind the front margin compressed parallel; the front lateral margin on either side armed with a tubercle; posterior angles of the lateral lobes of the pronotum turned outwards and little triangulate protuberant, not spined; hind process of pronotum produced beyond the apices of the hind femora about the length of the femora; wings fully explicate, reaching to the apex of the process; posterior femora rather stout, margins above crenulate with indistinct antegenicular lobe, margin below entire; posterior tibial margins dentate, a little expanded toward the apices, the first joints of the posterior tarsi with the margins little expanded; the three pulvilli equal in length and planate below.

Entire length of female 23 mm.; pronotum 21.5 mm.; post. femora 8.5 mm.

Habitat.—Calcutta.

This species is labelled: "*Gavialidium philippinum*, Bol." evidently in Saussure's handwriting. It is much smaller than that species and it differs in the shape of the posterior angles of the lateral lobes.

Eugavialidium saussurei, sp. nov.

Similar to the preceding. Ferruginous. Vertex subequal in width to one of the eyes, on either side dentate, barely elevated. Dorsum of pronotum above barely rugose, coarsely granulate; median carina of pronotum before the humeral angles provided with three small tubercles and also tuberculate backward as far as the base of the hind process; humeral angles very obtuse; posterior angles of the lateral lobes of the pronotum little acute triangulate produced outwards, not spined; front margin of pronotum on either side of the lobes bearing a small tubercle; wings fully explicate reaching nearly to the apex of process; anterior and middle femora little compressed, margins undulate; posterior femora stout, margins crenulate otherwise unarmed; hind tibial margins dentate, very moderately expanded toward the apices; first articles of the hind tarsi not at all expanded, narrow, the first pulvillus very small, the second and third longer and equal in length.

Entire length of male 20 mm.; pronotum 19 mm.; posterior femora 7.5 mm.

Habitat.—Calcutta, India.

This species like the preceding is labelled, "*Gavialidium philippinum*, Bol.," by Saussure. It is allied to *E. angulatum*, Hanc., but differs in the tuberculate median carina of the pronotum and as shown in the table of species. This species as well as the preceding somewhat resemble members of the genus *Gavialidium* in the dentate character of the vertex, but the lateral carinulae on each side are not elevated above the eyes.

Genus **Gavialidium**, Saussure.**Gavialidium crocodilus**, Saussure.

Sauss., Ann. Soc. Ent. France, iv, p. 481, 1861; Bol., Ann. Soc. Ent. Belg., xxxi, p. 219, 1887; Hanc., Spol. Zeylanica, ii, pp. 122, 123, pl. 2, fig. 11, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetr., pp. 22, 25, pl. 2, fig. 16, 1906.

Habitat.—Peradeniya, Ceylon; Pundaluoya, Ceylon.

One of these examples is labelled and the species determined by Saussure, which helps to authenticate this species.

In regard to the species *Gavialidium alligator*, Saussure (*Scelymena alligator*), its status is in doubt. It appears to me that the pupa of *crocodilus* served as a type for Saussure's *alligator*. I have a large series of the former species collected in Ceylon by Fletcher and Green, which show diverse variations, some being smaller than the normal size. From an examination of these specimens some of the immature pupa agree with the description of *alligator* given by Saussure. I am not sure, but the latter seems to be the pupa of *crocodilus* and therefore is synonymous.

Genus *Bolotettix*, Hancock.

This genus occupies a position midway between *Criotettix*, Bolivar, on the one hand, and *Systolederus* on the other. The representatives are small in stature, the eyes more or less exserted and near together, the vertex viewed from above very narrow, often one half or even one-third the width of one of the eyes, whereas, in *Systolederus*, the eyes are still closer together, separated only by the very narrow vertex as viewed in front and from above. In *Criotettix* the vertex is wider, and the antennae inserted between the eyes. The lateral lobes in *Bolotettix* have the posterior angles either turned down, or laterly reflexed outwards, little prominent, or produced in a spine on each side. Represented by a number of species in India, and other sections in the oriental region.

Table for the separation of Bolotettix of India.

1. Pronotal process shortened, not extended beyond the hind femoral apices; dorsum little rugose above; posterior angles of the lateral lobes obliquely sublaminately produced, apex of angle subacute; pronotum of female 9 mm. *anomalus*, Hancock.
1. 1. Pronotal process subulate, posteriorly extended beyond the knees of the hind femora.
 2. Lateral lobes of the pronotum with the posterior angles acute spinate.
 3. Legs distinctly fusco-annulate; posterior femora bearing oblique grey fascia; pronotum of male and female 11-14 mm. *oculatus*, Bolivar.
3. 3. Legs not distinctly fusco-annulate.
 4. Sides of the pronotum and the four anterior femora testaceous-yellow; posterior femora below bearing a deep black longitudinal fascia; pronotum of male and female 11.5-13.5 mm. *armatus*, sp. nov.
 4. 4. Sides of pronotum yellowish, legs yellowish obscurely marked with fuscous; pronotum of female 12 mm. *pictipes*, sp. nov.
2. 2. Lateral lobes of pronotum with the posterior angles either turned down, or obliquely reflexed outward but not acute spined.
 5. Posterior angles of the lateral lobes of the pronotum turned down, not at all reflexed outward, rounded below; pronotum of female 12.5 mm. *inermis*, sp. nov.
5. 5. Posterior angles of the lateral lobes reflexed outwards.

6. Posterior angles of the lateral lobes subquadrate, little reflexed outwards, obliquely truncate behind; pronotum of male and female 12.5-13.5 mm. . . *lobatus*, Hancock.
 Pronotum of female 10 mm. . . *exsertus*, Bolivar.
 Pronotum of female 14 mm. . . *quadratus*, sp. nov.
6. 6. Posterior angles of the lateral lobes triangulate produced, margin behind subsinuate-truncate, pronotum of male and female 12-15 mm. . . *triangularis*, sp. nov.

***Bolotettix anomalus*, Hancock.**

Systolederus anomalus, Hanc., Spolia Zeylanica, vi, p. 146, 1910.

Habitat.—Madulsima, Ceylon (*Hancock*).

***Bolotettix oculatus*, Bolivar.**

Criotettix oculatus, Bol., Ann. Mus. Civ. di Genova, xxxix, p. 71, 1898.

Habitat.—Kodaikanal, S. India (*Bolivar*).

The type came from Sumatra, and this species is reported from Java.

***Bolotettix armatus*, sp. nov.**

Near *lobatus*, Hancock. A graceful-bodied species. Head fuscous, pronotum above dark reddish-ochre forward, and backward on the hind process becoming very pale toward the apex, the four anterior legs, sides of the pronotum, and the lower part of the lateral lobes and spines light testaceous-yellow, the hind femora pale yellow with a deep black longitudinal fascia below the lower external carina. Vertex strongly narrower than one of the eyes, narrowed forward toward the front tricarinate, the median carina very little projecting; head and eyes distinctly exserted; eyes strongly elevated above the dorsum of pronotum and globose; antennae inserted below the eyes; frontal costa rather widely arcuate-elevated between the antennae and depressed between the eyes. Pronotum above plain, the dorsum little turned up in front; between the shoulders barely rugulose, behind the shoulders depressed subfossulate; median carina of pronotum percurrent substraight but little compressed forward between the sulci; lateral carinae little compressed subbicarinate on the shoulders; hind process long acute subulate, surpassing the hind femoral apices; posterior angles of the lateral lobes of the pronotum laminate and produced in a straight acute spine on each side, spine subcarinate and transverse, behind the spine the margin sinuate. Elytra small, elongate; wings extended barely beyond the pronotal apex, coloured black-infumate. Anterior and middle femoral margins entire; posterior femora elongate, externally bearing distinct ob-

lique rugae, and above with a series of rounded tubercles; the three pulvilli of the first joint of the hind tarsi subequal in length, or the first barely longer than the second.

Entire length of male and female 12.5-14.5 mm.; pronotum 11.5-13.5 mm.; posterior femora 5.2-6.3 mm.

Habitat.—Sukli, Dawna Hills, 2100 ft., Nov. 22, 1911 (*F. H. Gravely*).

This species has the head and eyes more exserted than in *lobatus*, Hanc.; the vertex narrower, and it, moreover, has strongly produced spines arming the lateral lobes directed at a right angle to the body. This species approaches *Systolederus* in the exserted and very narrow vertex.

Bolotettix pictipes, sp. nov.

Near *armatus*, Hancock. Above obscure yellowish-fuscous, the lower sides of the body and legs light yellow, obscure fusco-variegated, the hind femora pale fasciate at the middle and dark below. Head exserted; eyes globose; frontal costa distinctly produced between the eyes; vertex strongly narrower than one of the eyes in front, on either side of the mid-carina the space very little wider than in *armatus*, in the latter species the space on either side very narrow sulcate and the vertex tricarinate. Pronotum above with the dorsum planate, granulose, between the shoulders bearing two short carinulae, behind the shoulders subfossulate, posteriorly planate and obscurely subtuberculate; median carina of pronotum percurrent, very thin and low, subundulate posteriorly, forward behind the front margin depressed; hind process long acute subulate, surpassing the hind femoral apices; posterior angles of the lateral lobes of pronotum outwardly reflexed on each side and produced in a very narrow acute spine subtransverse, very slightly directed backward, the margin behind the base of spine rectangulate sinuate. Elytra short, ovate; wings extended to the apex of the pronotal process; femoral margins entire; the three pulvilli of the first joint of the hind tarsi equal in length.

Entire length of female 13.2 mm.; pronotum 12.5 mm.; posterior femora 5.8 mm.

Habitat.—Madras, Shevaroy's, 4000 ft., Aug. 1907 (*C. W. M., T. B. Fletcher*) in author's collection.

Bolotettix inermis, sp. nov.

Body above fuscous, sides and legs paler and variegated with fuscous, the hind femora mottled with yellow and fuscous, dark toward the apices and light basally, below the lower external carina black. Head very little exserted; eyes globose; vertex scarcely narrowed toward the front, subnarrower than one of the eyes, middle carinate, on each side fossulate, frontal carinulae laterally little elevated-acute, front subrounded truncate; antennae very long filiform, inserted far below the eyes; frontal costa

compresso-elevated between the antennae, depressed above between the eyes and distinctly sinuate at the median ocellus as viewed in profile. Pronotum above plain; median carina percurrent, elevated little arcuate between the sulci forward; between the shoulders provided on each side with a very distinct oblique rugula or line; lateral carinae percurrent on the shoulders, and before the shoulders distinctly compressed elevated; prozonal carinae behind the front border forward distinctly compressed, subparallel; hind process subulate, extended beyond the hind femoral apices; posterior angles of the lateral lobes of pronotum turned down, lower margin rounded. Elytra short, ovate, in the type black, with pale yellow apices; wings extended little beyond the pronotal apex; the four anterior femora elongate, compressed, margins entire; posterior femora stout, superior margins minutely serrulate-granose; the three pulvilli of the first joint of hind tarsi subequal in length.

Entire length of female 13.5 mm.; pronotum 12.5 mm.; posterior femora 6.5 mm.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1911 (*F. H. Gravely*).

In one of the specimens the hind process of pronotum is slightly less produced beyond the apices of the hind femora.

***Bolotettix lobatus*, Hancock.**

Systolederus lobatus, Hanc., Mem. Dept. Agric. India, iv, pp. 143, 144, 1912.

This species has the body above infusate, sides and legs paler, variegated with light ochre, hind femora with a pale median stripe, and below the lower external carina longitudinally black fasciate. Vertex strongly narrower than one of the eyes, distinctly narrowed forward between the curvate frontal carinulae; middle carinate between the forward half of the eyes and very slightly projecting, on either side of the mid-carina elongate fossulate; head exserted; eyes prominent and globose, higher than the dorsum of pronotum; antennae inserted far below the eyes; paired ocelli placed between the lower fourth of the eyes; frontal costa compressed arcuate between the antennae, little depressed between the eyes; strongly sinuate at the median ocellus in profile. Pronotum above plain subcylindrical forward, shining granulate, between the shoulders the dorsum convex, disc on either side presenting somewhat distinct oblique lines, behind the shoulders depressed subfossulate; lateral carina very slightly compressed, often reddish in colour; median carina percurrent, little elevated; prozonal carina forward behind the front margin very thin and parallel; posterior process extended beyond the hind femoral apices; posterior angles of the lateral lobes of the pronotum little obliquely laminate, reflexed outward, and obliquely truncate behind, the angles subacute. Elytra small, elongate, margin above substraight, below widely rounded and both extremities rounded,

externally punctate, the upper third part light ochreous, lower part infusate; wings nearly reaching to the apex of the pronotal process, infumate. Femora elongate; anterior femoral margins subundulate; posterior femoral margins granose; the three pulvilli of the first joint of the hind tarsi acute, subequal, or the third barely longer than the second.

Entire length of male and female 13.5-14.5 mm.; pronotum 12.5-13.5 mm.; posterior femora 6.2-7 mm.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1911 (*F. H. Gravelly*); Kurseong, E. Himalayas, 5000 ft., July 5, 1908 (*N. Annandale*).

The type in the author's collection is from Lebong, Darjiling Dist., 5000 ft. As it is an imperfect specimen, I have drawn the above description from fresh examples.¹

Bolotettix exsertus, Bolivar.

Criotettix exsertus, Bol., Ann. Soc. Ent. France, lxx, p. lxx, 583, 1902.

Habitat.—Kodaikanal, S. India (*Bolivar*).

Bolotettix quadratus, sp. nov.

Body pale grey or yellow, more or less marked with fuscous or black, on each side of the lower part of the pronotal lobes pale, posterior femora with a median longitudinal light fascia, and externally above marked with fuscous and with a longitudinal black fascia below but the fascia interrupted with yellow at the distal third; hind tibiae annulate with light and dark; underneath the body black and pale variegated. Head and eyes exserted, eyes higher than the dorsum of pronotum; vertex strongly narrower than one of the eyes, equal to about one-third the width, tricarinate forward; frontal costa between the antennae roundly compressed-elevated, depressed above between the eyes, sinuate at the median ocellus. Pronotum with the dorsum plain, little rugose between the shoulders; prozonal carina behind the anterior margin parallel; median carina percurrent, little compressed-elevated before the shoulders, behind the anterior margin concave, the margin anteriorly slightly elevated; lateral carinae in front of the shoulders barely compressed; humeral angles subbicarinate; hind process long subulate, extended beyond the hind femoral apices; posterior angles of the lateral lobes subquadrate, obliquely reflexed, and truncate behind, the apices little prominent. Elytra elongate, the apices rounded; wings black or infumate, extended beyond the pronotal apex. Anterior and middle femora elongate, margins entire; hind femora slender, margins minutely serrulate, hind

¹ Kirby had examined these specimens in the Indian Museum, and on one of the specimens he placed a label bearing the name: "*Systolederus cinereus*, Bol.," while on the second specimen he had affixed a label with the determination: "*Mazarredia lugubris*, sp. nov."

tibiae little curvate toward the base; the three pulvilli of the first joint of the hind tarsi subequal in length.

Entire length of female 15 mm.; pronotum 14 mm.; posterior femora 6 mm.

Habitat.—Singla, Darjiling District, 1500 ft., June, 1913 (*Lord Carmichael coll.*); Sikkim, Darjiling Dist. (*L. Mandelli*).

This species resembles *triangularis* in the narrow vertex, but differs in the lateral lobes which are subquadrate and little prominent as compared to the triangulate produced angles in *triangularis*. The exerted head suggests its approach to *Systolederus*, but the vertex is wider than in typical representatives of that genus.

Bolotettix triangularis, sp. nov.

Allied to *armatus*, Hancock, slightly larger in stature. Body reddish-ochreous, front of head and the sides of the lateral lobes mottled with black, underneath the body black, femora pale yellow, the hind femora marked with a longitudinal black fascia below the lower external carina, and faint traces of fuscous bars on the upper part. Vertex strongly narrower than one of the eyes, tricarinate, the median carina very little projecting; head and eyes exerted; frontal costa arcuate-elevated between the antennae, sinuate at the median ocellus. Pronotum plain above, dorsum rugulose between the shoulders; humeral angles bicarinate; median carina of pronotum substraight, percurrent, and subobsolete near the front border; posterior process subulate, long surpassing the hind femoral apices; posterior angles of the lateral lobes of the pronotum laminate dilated laterally and distinctly triangulate produced, subacute, the margin behind subsinuate truncate. Elytra small, elongate-ovate; wings extended little beyond the pronotal apex. Anterior and middle femoral margins entire; posterior femoral margins granose or entire; the third pulvilli of the first joint of the hind tarsi little longer than the second.

Entire length of male and female 13.5-16 mm.; pronotum 12-15 mm.; posterior femora of the male 6 mm.

Habitat.—Sibsagar, N.-E. Assam (*S. E. Peal*).

The two specimens in the Indian Museum collection were determined as "*Systolederus angusticeps*, Stal.," presumably by Saussure. It is hardly necessary to state that the latter, a Philippine species, is of much larger stature and has acute spines arming the lateral lobes of the pronotum.

Genus *Thoradonta*, Hancock.

Hancock, Trans. Ent. Soc. London, p. 407, 1907.

Thoradonta spiculoba, Hancock.

Hanc., Mem. Dept. Agric. India, iv, p. 138, 1912; Hanc., Records Ind. Mus., viii, pp. 312, 313, 1913.

Habitat.—Calcutta (*N. Annandale*; *Brunetti*; and *F. H. Gravely*); Rangoon, 1905 (*Brunetti*); Kandy, Ceylon (*Hancock coll.*). I have previously reported this species from: Bihar, Pupri, Muzaffarpur; Pusa; Durbhanga; Dibrugarh, N. E. Assam.

Thoradonta sinuata, sp. nov.

Colour ferruginous. Head not at all exserted; vertex wider than one of the eyes; frontal costa compresso-elevated between the antennae. Pronotum above rugose, tuberculose; median carina strongly sinuate, tuberculate, in front of the shoulders and behind the humeral angles gibbulate; prozonal carinae forward behind the anterior margin convergent backward; lateral carinae behind the humeral angles sinuate and compressed; dorsum on the disc between the shoulders widened, tuberculose, and bearing a short carinula on each side, behind the shoulders bifossulate; humeral angles with the carinae compressed; posterior process subulate, extended little beyond the hind femora apices; posterior angles of the lateral lobes of the pronotum laminate expanded and abruptly constricted and produced in a narrow transverse sharp spine on each side, sinuate in front and behind the angle; margins of the lateral lobes minutely serrulate. Elytra wide at the middle, narrowed forward and strongly narrowed toward the apices; wings extended nearly to the apex of the pronotal process. Anterior femoral margins undulate; middle femoral margins subtrilobate above and below; posterior femora externally rugose; margins serrulate; the first two pulvilli of the first article of the hind tarsi spinose, the third acute.

Entire length of female 9 mm.; pronotum 8 mm.; posterior femora 5 mm.

Habitat.—Moleswar, W. of Yenna Valley, Satara Dist. 3200 ft., April 23, 1912 (*F. H. Gravely*).

This species differs from *spiculoba*, Hancock, in having the forward gibbosity in front of the shoulders on the pronotum lower and smaller, and in the less dilated posterior angles of the lateral lobes of the pronotum, and in the abruptly contracted and transversely produced narrow sharp spine, in contrast with the less contracted suboblique spine on each side in *spiculoba*, the spines in the latter having the bases wider.

Thoradonta apiculata, sp. nov.

Near *spiculoba* and *sinuata*, Hancock. Colour greyish-rufescent, sometimes infuscate, the hind tibiae pale annulate. Head not at all exserted; vertex wider than one of the eyes; frontal costa distinctly protuberant between the antennae. Pronotum above rugose-granulose; median carina of the pronotum compressed-gibbulate before the shoulders, but not so elevated as in *spiculoba*, and posteriorly sinuate; hind process subulate and extended much beyond the hind femoral apices; posterior angles

of the lateral lobes of the pronotum little dilated-laminate, and produced on each side in a small sharp spine with a wide base, the margin in front oblique and not at all sinuate, but behind right-angle sinuate; wings extended to the apex of the pronotal process.

Entire length of male and female 10-11 mm.; pronotum 9.5-10.5 mm.

Habitat.—Upper Assam; Sukli, Dawna Hills, 900-2100 ft., Oct. 23, 1911 (*F. H. Gravely*); Tenasserim Valley, Lower Burma (*Doherty*); Darjiling Dist. Singla, 1500 ft., May, 1913 (*Lord Carmichael coll.*); Sibsagar, N. E. Assam (*S. E. Peal*).

Thoradonta nodulosa, Stal.

Tettix nodulosa, Stal, *Eugenes Resa*, *Orth.*, p. 348, 1860; *Criotettix nodulosus*, Bol., *Ann. Soc. Ent. Belg.*, xxxi, p. 230, 1887; *Brunn.*, *Rev. Syst. Orth.*, p. 105, Genova, 1893.

Habitat.—Carin Cheba (*Brunner*).

The habitat of this species is Java and Malacca, and Brunner's record may refer to one of the species I have just described. Specimens of *Thoradonta nodulosa*, Stal, are in my collection taken in Java by Jacobson, and they differ from any of the Indian species, in the posterior angles of the lateral lobes of the pronotum. In *nodulosus*, Stal, the angles are shortly acuminate, while in the above mentioned species they are spined, though in *apiculata* and *spiculoba* the base of the spines is widened.

Genus *Criotettix*, Bolivar.

Plate xiv.

Table for separating the Indian species of Criotettix.

1. Vertex not at all produced.
2. Hind process of pronotum not, or very little surpassing the hind femoral apices: wings shorter than the process: frontal costa arcuate produced before the eyes: dorsum narrow between the shoulders; pronotum of male 9 mm. . . *rugosus*, Bolivar.
2. 2. Hind process of pronotum lengthily surpassing the hind femoral apices; wings extended to the apex of the pronotal process.
3. Stature moderately small; pronotum of female not exceeding 13 or 14 mm. in length.
4. Vertex very narrow, strongly narrower than one of the eyes; spine on each side of the posterior angles of the lateral lobes of pronotum long, straight, and sharp: pronotum of male and female 10.5-12.5 mm. . . *tricarinatus*, Bolivar.

4. 4. Vertex subequal in width to one of the eyes: dorsum between the shoulders convex; spine on each side of the lateral lobes transverse slender elongate and sharp.
5. Lateral lobes of pronotum with the posterior angles spined.
6. Spine on each side of the lateral lobes straight; pronotum of male 11 mm.
indicus, Bolivar; *orientalis*, Hancock.
6. 6. Spine on each side of the lateral lobes curvate; base of pronotal process above tuberculose; pronotum of male and female 9.8-12 mm.
spinilobus, Hancock.
5. 5. Lateral lobes of pronotum with the posterior angles laminate, subquadrate, the angle but little prominent; hind process above subnodulose; vertex narrower than one of the eyes; pronotum of male and female 10.8-11 mm.
pallidus, sp. nov.
3. 3. Stature larger, above little rugose subtuberculose; posterior angles of the lateral lobes subquadrate, obliquely truncate behind, the angle little prominent, not at all spined; colour ferrugineous; vertex narrower than one of the eyes; pronotum of male and female 13-15.5 mm.
dohertyi, sp. nov.
7. Lateral lobes of the pronotum with the posterior angles barely produced.
8. Pronotum slender subulate posteriorly, strongly produced backward; dorsum above somewhat smooth, behind the shoulders lightly fossulate; posterior angles of the lateral lobes little prominent, sinuate behind; pronotum 17 mm. sex?
aequalis, Hancock.
8. 8. Pronotum wider between the shoulders, behind the shoulders strongly fossulate; hind process produced beyond the hind femora 4 mm.; apices of the posterior angles of the lateral lobes little prominent, not at all produced or spined; pronotum of male 15 mm. *montanus*, Hancock.
7. 7. Lateral lobes at the posterior angles produced, acute.
9. Spines of the posterior angles of the lateral lobes of the pronotum more or less obliquely directed backward; vertex subnarrower than one of the eyes.

10. Stature of moderate size; above dull rugose-granulate; dorsum behind the shoulders fossulate, tuberculose on the base of process; colour fuscous, or sometimes marked with ochre, the hind femora obscurely marked, or with bars of ochre; pronotum of male and female 13.5-17 mm. *annandalei*, sp. nov.
10. 10. Stature large, above shiny; rather broadly depressed behind the shoulders and on either side between the shoulders; colour often ochreous-brown above; pronotum of male and female 16.7-20.5 mm. *gravelyi*, sp. nov.
9. 9. Spine on each side of the posterior angles of the lateral lobes of pronotum directed at a right angle, transverse, not oblique.
11. Posterior femoral margins above tri- or quadridentate; dorsum moderately wide between the shoulders; abdomen yellow maculate; pronotum of male 17 mm. *flavopictus*, Bolivar.
11. 11. Posterior femoral margins above subcrenulate, or barely lobate; dorsum wider between the shoulders; abdomen often white maculate.
12. Body above greyish-ochreous; sides of the body and hind femora covered with pale granulations; hind process often pale maculate toward the apex; body below fuscous and light, palpi white; pronotum of male and female 17.5-21 mm. *grandis*, Hancock.
12. 12. Body above fuscous or greyish-fuscous; hind femora obscurely mottled or with bars of ochre; pronotum of male and female 17.5-20.5 mm. *maximus*, Hanc.
Pronotum of female 18 mm.
race or var. *extremus*, Hancock.
1. 1. Vertex little produced; dorsum of pronotum rugulose; posterior angles of the lateral lobes of pronotum depressed, acute, barely produced; pronotum of male and female 14 mm. *vidali*, Bolivar.

Criotettix rugosus, Bolivar.

(Fig. 2, Plate xiv.)

Bol., Ann. Soc. Ent. Belg., xxxi, p. 228, 1887; Brunn., Ann. Mus. Genova, xxxiii, p. 105, 1893.

Habitat.—Rangoon, Burma (*N. Annandale*). Brunner records this species from Lower Burma.

***Criotettix tricarinatus*, Bolivar.**

(Fig. 14, Plate xiv.)

Bol., Ann. Soc. Ent. Belg., xxxi, p. 224, 1887; Hanc., Spolia Zeylanica, ii, p. 128, pl. 3, fig. 15, 1904.

Habitat.—Sigiriya, Ceylon, Sept. 1909 (*E. E. Green*); Kandy, Ceylon, Apr. 1907; Peradeniya, Ceylon, July 1913 (*A. R.*). Bolivar records this species from Kodaikanal, S. India, in Ann. Soc. Ent. France, lxx, p. 583, 1902.

***Criotettix spinilobus*, Hancock.**

(Fig. 13, Plate xiv.)

Hanc., Spol. Zeylan., ii, p. 130, pl. 3, fig. 12, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetriginæ, p. 28, fig. 13, 1906.

Habitat.—Pundaluoya, Ceylon; Vurkalay, Travancore coast, S. India (*N. Annandale*).

This small species has the vertex subequal in width to one of the eyes, and the posterior angles of the lateral lobes on each side have a strongly produced sharp spine, curvate forward. The specimen from Travancore in the Indian Museum bears Kirby's label on which is written "*Criotettix obscurus* Kb. type." The specimen is identical with the type of *spinilobus* in the author's collection. This species resembles *indicus*, Bol., but may be distinguished by the curved spines.

***Criotettix indicus*, Bolivar.**

Bol., Ann. Soc. Ent. France, lxx, p. 581, 1902.

Habitat.—? S. India (*Bolivar*). Not represented in the Indian Museum coll.

***Criotettix orientalis*, Hancock.**

(Fig. 12, Plate xiv.)

Hanc., Records Ind. Mus., vii, p. 312, pl. xv, fig. 4, 1913.

Habitat.—Dibrugarh, N. E. Assam.

***Criotettix pallidus*, sp. nov.**

(Fig. 5, Plate xiv.)

Near *indicus*, Bolivar. Stature small; vertex distinctly narrower than one of the eyes, little narrowed forward; eyes globose; head not at all exserted; antennae inserted between the lower part of the eyes; frontal costa compresso-elevated between the antennae. Pronotum little rugose-granulose, between the shoulders little convex, disc on each side bearing a short carinula; pro-

zonal carinae behind the anterior border convergent backward; dorsum behind the shoulders, depressed, fossulate, and backward on the process bearing subelevated nodules; hind process subulate, extended beyond the hind femoral apices; median carina of the pronotum very low, thin, and sinuous; posterior angles of the lateral lobes laminate expanded, little triangulate and prominent, behind truncate, but the hind margin concave. Elytra ovate, apices rounded; wings fully explicate extended backward to the end of the pronotal process. Anterior femoral margins entire; middle femoral margins above and below undulate; hind femora somewhat stout, margins entire, minutely crenulate, externally above with a series of obtuse tubercles, and at the middle bearing distinct oblique rugulae; the pulvilli of the first joint of hind tarsi acute spiculate.

Entire length of male and female 11.5 mm.; pronotum 10.8 mm.; hind femora 5 mm.

Habitat.—Tenasserim Valley, Lower Burma (*Doherty*).

Criotettix dohertyi, sp. nov.

(Fig. 4, Plate xiv.)

Colour ferruginous. Vertex strongly narrower than one of the eyes, little narrowed forward; eyes globose; head not at all exerted; antennae inserted between the lower angles of the eyes, not wholly between the eyes, and lower than in *tricarinatus*. Frontal costa compresso-elevated between the antennae, a little depressed above between the eyes, and distinctly sinuate at the median ocellus. Pronotum with the dorsum rugose-granulate, behind the shoulders depressed, between the shoulders convex and rather wide; on each side bearing a very thin carinula; on the process rugose-granulate, and bearing more or less irregular sub-elevated obtuse tubercles; posterior process subulate, long produced beyond the hind femora apices; median carina of pronotum very low, thin, and sinuous; prozonal carinae forward behind the front margin convergent backward, indistinctly expressed; posterior angles of the lateral lobes of the pronotum laminate expanded, little acute, prominent, margin behind the angle truncate, but very slightly concave. Elytra ovate, apices rounded-truncate; wings extended to the apex of the pronotal process. Anterior femoral margins entire; middle femoral carinae above entire, below sub-undulate; middle femora of male stouter, less elongate; hind femoral margins granulose, entire, the external face below subinfuscate; hind tibiae plain dark brown; the third pulvillus of the first joint of the hind tarsi little longer than the second, the first two pulvilli acute spinose.

Entire length of male and female 13–16.5 mm. pronotum 12–15.5 mm.; posterior femora 5.5–7.3 mm.

Habitat.—Upper Assam (*Doherty*).

Two specimens in the Indian Museum have labels, apparently in Saussure's handwriting, bearing the name "*Paralettix varia-*

balis, Bol." This species recalls the genus *Paratettix* in the characters of the vertex, yet the lateral lobes at the posterior angles are laminate, the angle truncate behind and the apex prominent. It materially differs from *Paratettix variabilis*, Bol., in many respects.

Criotettix aequalis, Hancock.

(Fig. 3, Plate xiv.)

Hanc., Mem. Dept. Agric. India, iv, p. 136, 1912.

Habitat.—Bengal, Probsering, Lebong, 5000 ft. (Author's coll.)

Criotettix montanus, Hancock.

(Fig. 1, Plate xiv.)

Hanc., Mem. Dept. Agric. India, iv, pp. 133, 134, 1912.

Habitat.—Punjab, Simla, 7000 ft. (Author's coll.)

Criotettix annandalei, sp. nov.

(Fig. 6, Plate xiv.)

Near *gravelyi*, Hancock. Stature smaller; coloured fuscous, obscurely variegated with lighter brown, hind femora obscurely pale mottled. Vertex narrower than one of the eyes, subgranulose, fossulate on each side of the median carina, widened backward; head not exerted; antennae inserted between the lower angles of the eyes, not wholly between the eyes; frontal costa compresso-elevated arcuate between the antennae, not so roundly produced as in *gravelyi*. Pronotum deplanate on the dorsum, little convex between the shoulders, dull rugose-granulose, behind the shoulders bifossulate and the surface on the base of the process more or less pitted and tuberculose as in *Eugavialidium*, prozonal carinae forward behind the front border lightly expressed, subparallel; posterior process subulate and acute produced much beyond the hind femoral apices; median carina of pronotum very low and thin, following the inequalities, obsolete forward behind the anterior margin; elytra elongate-ovate, apices rounded; wings extended to the apex of the pronotal process; posterior angles of the lateral lobes laminate and produced in an oblique acute spine on each side, anterior femoral margins subentire; middle femoral margins above minutely crenulate, subundulate, below undulate, very indistinctly bilobate; hind femora rather stout, margins above crenulate and often bearing very indistinct pale crenulate lobes, or absent, below margins subentire; pulvilli of the first joint of the hind tarsi subacute, not at all spinose, the third pulvillus longer than the second and planate below.

Entire length of male and female 14.5 17 mm.; pronotum 13.5 mm.; posterior femora 6–7 mm.

Habitat.—Paresnath, W. Bengal (Chota Nagpur), 4300 ft., April 15, 1909 (*N. Annandale*).

Two of the specimens in the Indian Museum collection were labelled by Kirby "*Criotettix exsertus*, Bol." The latter species has the head more exserted, and is otherwise very different from *Criotettix annandalei*, sp. nov., described above, and as noted under the genus *Bolotettix*, Hancock.

Criotettix gravelyi, sp. nov.

(Fig. 9, Plate xiv.)

Stature large, dorsum ochreous or dark ochreous-brown, and subglabrous, the sides of the body, the under parts, legs, and wings, more or less black; posterior femoral carinae pale maculate, externally the hind femora marked with ochre, vertex smooth, in front subnarrower or subequal in width to one of the eyes, very slightly subnarrowed forward, median carina little expressed at the front; frontal costa roundly compressed between the antennae; eyes not exserted; antennae inserted between the lower angles of the eyes. Pronotum with the dorsum deplanate, rather smooth, little convex between the shoulders, broadly depressed behind the shoulders, posteriorly long subulate; prozonal carinae behind the front margin subparallel or indistinctly convergent backward; median carina of pronotum substraight, very low, obliterated forward behind the front border, little rounded subnodulose forward between the sulci; hind process produced much beyond the apices of the hind femora; posterior angles of the lateral lobes laminate, the apices produced in suboblique spines; elytra oblong-ovate, apices rounded-truncate; wings reaching to the apex of the pronotal process; margins of four anterior femora subentire; the superior carina of the middle femora granulate subundulate, below biundulate, or entire; posterior femoral margins above minutely crenulate, with very indistinct elevated pale lobes; externally above bearing a series of rounded tubercles, and at the middle bearing oblique rugulae; the three pulvilli of the first joint of hind tarsi subequal in length, the third subplanate below.

Entire length of male and female 17.5—20.5 mm.; pronotum 17—20 mm.; hind femora 7—9 mm.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July 1911 (*F. H. Gravely*); Sikkim, Darjiling Dist. (*L. Mandelli*).

Criotettix flavopictus, Bolivar.

(Fig. 10, Plate xiv.)

Bol., Ann. Soc. Ent. France, lxx, p. 582, 1902.

Habitat.—Thingannyinaung to Sukli, Dawna Hills, 900—2100 ft., Nov. 23, 1911 (*F. H. Gravely*); Misty Hollow, W. side of Dawna Hills, 2200 ft., Nov. 22, 1911 (*F. H. Gravely*): Ind. Mus. coll. Anamalais, about 2500 ft., Jan. 21, 1912 (*T. B. Fletcher author's coll.*). Kodaikanal (Castets, Decoly; *Bolivar*).

***Criotettix maximus*, Hancock.**

(Fig. 7, Plate xiv.)

Hanc., Records Indian Museum, viii, pp. 311, 312, pl. xv, fig. 1, 1913.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1911 (*F. H. Gravely*). Yembung, 1100 ft.; Janakmukh, 600 ft. (*author's coll.*).

Note: In the figure given in the Rec. Ind. Mus. the elytra are drawn too large by the artist.

***Criotettix extremus*, Hancock.**

(Fig. 11, Plate xiv.)

Hanc., Mem. Dept. Agric. India, iv, pp. 132, 133, 1912.

Habitat.—Madras, Shevaroy, 4000 ft. (*author's coll.*).

It is quite probable that this is a variety or race of *maximus* Hanc., and I have so regarded it in the table separating the species of *Criotettix*.

***Criotettix vidali*, Bolivar.**

Bol., Ann. Soc. Ent. Belg., xxxi, p. 227, 1887; Brunn. Ann. Mus. Genova, xxxiii, p. 105, 1853.

Habitat.—Carin Cheba (*Brunner*). This species was described by Bolivar from Philippine specimens, and I am including it here on the authority of Brunner.

***Criotettix grandis*, Hancock.**

(Fig. 8, Plate xiv.)

Hancock, Mem. Dept. Agric. India, iv, pp. 134, 135, 1912.

Habitat.—Darjiling Dist., Singla, 1500 ft., Mar., 1913 (*Lord Carmichael coll.*).

The type in the author's collection is from Assam, Chera-punji, Khasi Hills. The specimens in the Indian Museum do not differ from the type, except in the colour of the body. In these specimens the colour is grey above, the sides of the body and hind femora covered with pale granulations, the pronotal process toward the apex darker and often minutely pale spotted; the anterior and middle tibiae annulate with white; body below fuscous and light; palpi white; hind femora with obscure pale bars; spines of the lateral lobes of pronotum acute, but not long produced. In the males the spines narrower. In one specimen from Upper Burma, Shan Hills (*J. C. Brown*), the spines of the lateral lobes are more acutely produced. The type specimen is somewhat faded with age, and the colour of the fresh specimens add materially to the original description.

Genus *Loxilobus*, Hancock.

Hancock, Spol. Zeylan., ii, p. 134, 1904.

The members of this genus have the vertex subequal or wider than one of the eyes, and narrowed forward; the frontal costa roundly produced before the eyes; the antennae inserted between the eyes, and the head not at all exserted. The pronotum above little rugose, often tuberculate, and with elongate lines; the posterior angles of the lateral lobes laminate, triangulate, and acute, the margin of lobes behind truncate or obtuse sinuate; wings often extended backward little beyond the pronotal apex. This genus seems to occupy a place between *Criotettix* on the one hand and *Coptotettix* on the other.

Loxilobus acutus, Hancock.

Hanc., Spol. Zeylan., ii, p. 134, figs. 3 and 16, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetr., p. 29, pl. ii, fig. 17, 1906; Hanc., Mem. Dept. Agric. India, iv, p. 137, 1912.

Habitat.—Ceylon. Author's coll.

Loxilobus subulatus, Bolivar.

Criotettix subulatus, Bol., Ann. Soc. Ent. Belg., xxxi, p. 227, 1887.

Habitat.—“Indes Orientalis” (Bolivar).

Loxilobus hancocki, Kirby.

Loxilobus rugosus, Hanc., Spol. Zeylan., ii, p. 135, 1908; Kirby, Syn. Cat. Orth. Brit. Mus., iii, p. 18, 1910.

Habitat.—Bombay, India; Ceylon. Author's collection.

Loxilobus assamus, Hancock.

Hanc., Trans. Ent. Soc. Lond., p. 223, 1901; Hanc. Mem. Dept. Agric. India, v, p. 136, 1912.

Habitat.—Assam; Bengal, Lebong. Author's coll.

Loxilobus parvispinus, sp. nov.

Resembling *acutus*, Hancock, but having the dorsum of pronotum little rugose; median carina of the pronotum thin, very low, irregularly compressed backwards, the rugae not so distinctly elevated; the posterior angles of the lateral lobes of the pronotum laminate, the apex on each side bearing a very small minute acute spine, the margin behind sinuate; the lateral carinae and the median carina of the pronotum much thinner and not so compressed as in *acutus*; colour dark ferruginous, the sides of the abdomen and wings black, the hind femora with an obscure longitudinal black fascia below on the outer face: wings extended little beyond the pronotal apex.

Entire length of male 13 mm.; pronotum 12 mm.; posterior femora 5 mm.

Habitat.—Pusa, Bihar, July 9, 1910 (*T. B. Fletcher*). Author's coll.

This species was taken for *L. acutus*, and the male was described as that species in my report in the Mem. Dept. India, IV, p. 137, 1912. The present description is supplemental to that account, and refers to *parvispinus* instead of *acutus*.

Loxilobus striatus, sp. nov.

Near *acutus*, Hancock. Greyish-fuscous above, sides of body, and legs, paler reddish-ochre; hind femora below the lower external carina marked with a longitudinal black fascia; wings black or infumate. Vertex wider than one of the eyes, slightly narrowed forward, granulose; frontal costa arcuate produced between the eyes; antennae inserted distinctly between the lower fourth of the eyes. Pronotum granose, interspersed with very small tubercles; dorsum between the shoulders little convex, moderately wide, behind the shoulders deplanate, subulate posteriorly, surpassing the hind femoral apices; median carina of pronotum very low, thin, and irregularly interrupted and compressed; posterior angles of the lateral lobes of the pronotum laminate and obliquely truncate behind, the apices subacute, little prominent. Elytra elongate, the apices rounded-truncate; wings extended little beyond the pronotal apex. Anterior and middle femoral margins above entire, the inferior margins subundulate; hind femora moderately stout, margins minutely crenulate, the antegenicular spine acute, the third pulvilli of the first joint of the hind tarsi nearly as long as the first and second united, the first and second pulvilli spinose.

Entire length of male 11.5 mm.; pronotum 10.5 mm.; posterior femora 5.5 mm.

Habitat.—Calcutta, Aug. 26, 1904 (*Brunetti*); Thingammyinaung to Sukli, Dawna Hills, Lower Burma, 900-2100 ft., Nov. 23, 1911 (*F. H. Gravely*).

This species differs from *parvispinus* in the posterior angles of the lateral lobes being obliquely truncate behind, instead of sinuate and spined; while in *acutus* the angle of the lobes has the margins behind subtransverse.

Genus *Acanthalobus*, Hancock.

Table for the separation of the Indian species.

1. Vertex little wider than one of the eyes, lateral lobules in front marginate; spine on each side of the posterior angles of the lateral lobes of pronotum acute and obliquely produced, the margin behind widely concave-sinuate *miliarius*, Bolivar.
cuneatus, Hancock

1. 1. Vertex distinctly wider than one of the eyes, narrowed toward the front, imperfectly marginate, or subtruncate.
2. Hind femora with the superior margin above distinctly lobate-serrulate, and toward the base costate; inferior margin subtuberculate; spine on each side of the lateral lobes of the pronotum moderately produced, acute, and subtransverse, the margin behind strongly sinuate *curticornis*, sp. nov.
2. 2. Hind femoral margins above not at all or scarcely dentate; spine on each side of the lateral lobes of the pronotum acute and oblique, and strongly produced.
3. Median carina of the pronotum behind the shoulders depressed, dorsum between the humeral angles convex; posterior femora above sparingly lobate *saginitus*, Bolivar.
3. 3. Median carina of the pronotum behind the shoulders not or barely depressed; dorsum between the humeral angles subdeplanate; posterior femora above entire, not at all dentate *bispinosus*, Dalm.

Acanthalobus miliarius, Bolivar.

Criotettix miliarius, Bol., Ann. Soc. Ent. Belg., xxxi, p. 226, 1887.

Acanthalobus miliarius, Hanc. Spol. Zeylan., ii p. 155, pl. 2, fig. 8, 1904.

Hanc. Gen. Ins. Orth. Acrid. Tetr., p. 29, pl. 2, fig. 19, 1906.

Habitat.—Trincomalee, Nov. 1906; Colombo; Ceylon. Ind. Mus. coll.

Acanthalobus cuneatus, Hancock, l. c. 1904, is apparently the short-wing form of *miliarius*.

Acanthalobus curticornis, sp. nov.

Yellowish-rufescent, darker on the dorsum of pronotum forward and on the front of the head. Vertex strongly wider than one of the eyes, narrowed forward toward the front, subfossulate on each side, front imperfectly marginate, subtruncate, median carina very small, little elevated and subproduced; antennae very short, inserted between the lower part of the eyes; frontal costa arcuate-elevated between the antennae and depressed at the vertex. Pronotum with the dorsum deplanate, between the shoulders convex and rather wide, bearing rounded tubercles irregularly dis-

tributed; median carina low, interrupted and sparingly tuberculate, forward between the sulci elevated-crassate, subnodulose; prozonal carinae behind the anterior border convergent backward, and distinctly expressed; hind process of pronotum strongly crassate and rounded, strongly produced backward beyond the hind femoral apices; posterior angles of the lateral lobes of the pronotum laminate expanded, the angle contracted and acute produced in a spine on each side, subtransversely directed, the margin behind distinctly right-angulate sinuate. Elytra oblong, narrowed toward the apices and rounded; wings largely covered by the hind process, and extended to the apex of the pronotum, the part showing narrow; anterior femoral carinae entire; middle femoral margins above subundulate, below indistinctly bituberculate; posterior femoral margins above with the forward half costate, backward dentate, and minutely serrulate; in the type two of the denticles very distinct, and two less distinct, margin below provided with a series of barely elevated tubercles; hind tibiae sinuate-curved; pulvilli of the first joint of the hind tarsi elongate, acute

Entire length of female 19 mm.; pronotum 18.5 mm.; posterior femora 7 mm.

Habitat.—Medha, Yenna Valley, Satara Dist., Bombay Pres., 2200 ft., Apr. 17, 1912 (*F. H. Gravely*).

The spines of the lateral lobes in this species are shorter than in *saginitus*, or in *miliarius*, and they are more transverse; moreover, there are none of the series of short lines on the dorsum of pronotum, though tubercles are distinctly evident.

Acanthalobus saginitus, Bolivar.

Crioteletix saginitus, Bol., Ann. Soc. Ent. Belg., xxxi, pp. 225, 226, 1887; Brunner, Ann. Mus. Genova, xxxiii, p. 104, pl. 5, fig. 38, 1893.

Habitat.—S. India (*Bolivar*); Rangoon, L. Burma (*Brunner*). Not in the present collection.

The name *Acanthalobus saginitus* is given as a synonym for *Tettix inornata*, Walker, in Kirby's Cat. Orth., III, p. 17, 1910. This does not seem justified from Walker's description in which he states in referring to the pronotum: "three spines on each side, the hind spine longer than the two others, and inclined obliquely backward." As there is only one spine on each side of the pronotum in *saginitus*, Walker's species cannot be interpreted as this species, but it may belong to the genus *Hexocera*.

Acanthalobus bispinosus, Dalm.

Acrydium bispinosum, Dalm., Vet.-Akad. Handl., p. 77, 1818; Kirby, Cat. Orth., iii, p. 18, 1910; Syn. *Tettix pallitaris*, Walk.; *Tettix armiger*, Walk.; *Tettix latispinus*, Walk.

Habitat.—Sibsagar, N. E. Assam (*S. E. Peal*); Assam. Ind. Mus. coll.

Genus **Tettitelum**, nov.

Head not at all exserted; vertex very wide, strongly wider than one of the eyes, on each side fossulate, and provided laterally with a rounded compressed carinula; middle subcarinate forward barely subproduced; face broad, in profile little oblique; eyes viewed from above little prominent, but viewed from the side moderately small; paired ocelli placed between the middle of the eyes; antennae inserted between the lower part of the eyes, or barely lower; frontal costa widely sulcate between the paired ocelli, the rami subparallel, in profile scarcely elevated between the antennae; apical articles of palpi narrow. Pronotum above plain, subcylindrical forward, anteriorly truncate, posteriorly long acuminate, the apex acute subspinate; humeral angles wanting, the dorsum forward roundly sloping at the sides; prozonal carinae behind the anterior margin obsolete; posterior angles of the lateral lobes of the pronotum laminate-expanded, with the inferior margin before the angle, or the angle produced in an acute spine, curvate forward. Elytra elongate, apices rounded; wings fully explicate and reaching to the pronotal apex; anterior and middle femora elongate, margins entire, minutely serrulate. Blades of the female ovipositor rather short and straight, not at all curvate at the apices, hirsute, but not at all dentate, the upper blade rather broad. Near *Acanthalobus*, Hancock.

Tettitelum hastatum, sp. nov.

Colour yellowish, variegated with fuscous, the base of the pronotal process above suffused with black, lower margins of the lateral lobes, the elytra, and underneath the body pale yellow, abdomen greyish-fuscous, backward densely white maculate toward the extremity. Face robust; vertex not advanced as far as the eyes, strongly wider than one of the eyes, marginate in front, on either side fossulate, subampliate on the occiput; frontal costa compressed but scarcely elevated between the antennae. Pronotum above plain, minutely rugulose-granose and punctate; dorsum between the shoulders very obtuse tectiform, little subdepressed behind; median carina of pronotum very low, percurrent, and barely elevated forward before the shoulders; lateral carinae before the shoulders and also the prozonal carinae behind the anterior border wanting: the forward part of the pronotum cylindrical; posterior process long subulate, the apex sharply pointed; posterior angles of the lateral lobes of pronotum laminate expanded, the lower margin produced laterally in a curvate acute spine on each side, directed forward; anterior and middle femora elongate, margins minutely serrulate.

Entire length of female 17.5 mm.; pronotum 16 mm.: (hind femora missing).

Habitat.—Kawkareik, Amlherst Dist., Lower Burma, Mar. 5, 1908 (*N. Annandale*).

The type bears a label on which Kirby has written: “*Eugavialidium hastatum*, Kb., Type.”

METRODORINÆ.

Genus *Systolederus*, Bolivar.

Systolederus greeni, Bolivar.

Bol., Ann. Soc. Ent. France, lxx, p. 584, 1892; Hanc., Spol. Zeylan., ii, p. 155, pl. 2, fig. 9, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetr., p. 34, pl. 2, fig. 14, 1906.

Habitat.—Nilgiris, S. India; Maskeliya, Ceylon; Pundaluoya, Ceylon; Madulsima, Ceylon, July 13, 1908 (*T. B. Fletcher*; *Hancock*). Ind. Mus. coll.

Systolederus cinereus, Brunner.

Brunn., Ann. Mus. Genova, xxxiii, p. 105, 1893.

Habitat.—Carin Cheba (*Brunner*).

Genus *Eurymorphopus*, Hancock.

Eurymorphopus latilobus, Hancock.

Hanc., Spolia Zeylanica, v, pp. 113, 114, fig. 1, 1908.

Habitat.—Kandy, Ceylon, May 29, 1910; Undugoda, Ceylon, Sept 1909. Ind. Mus. coll.

This small species is easily recognized by the narrow vertex, and the strongly dilated margins of the lateral lobes of the pronotum.

Genus *Spadotettix*, Hancock.

Hanc., Spol. Zeylan., vi, pp. 146, 147, 1910; Hanc., Mem. Dept. Agric. India, iv, pp. 141, 142, 1912.

Spadotettix fletcheri, Hancock.

Spol. Zeylan., vi, pp. 147, 148, figs. 1, 2, 1910.

Habitat.—Ceylon. Author's coll.

Spadotettix provertex, Hancock.

Mem. Dept. Agric. India, iv, pp. 142, 143, 1912.

Habitat.—Madras, India. Author's coll.

Genus *Apterotettix*, Hancock.

Hanc., Spol. Zeylan., ii, pp. 108, 140, 1904; Hanc., Gen. Ins., pp. 30, 35, 1906.

Apterotettix obtusus, Hancock.

Hanc., Spol. Zeylan., ii, p. 155, pl. 3, fig. 13, 1904; Gen. Ins., p. 35, fig. 16, 1906.

Habitat.—Peradeniya, Ceylon. Ind. Mus. coll.

Genus **Amphinotus**, nov.

Stature small and apterous, with the head moderately exserted. Vertex wide, subwidened forward, strongly wider than one of the eyes, bifossulate forward, submamillate between the posterior part of the eyes, the frontal carinulae laterally little compressed, abruptly terminated but not cuspidate, open each side of the mid-carina, middle carinate forward, compressed and little produced; face little oblique; eyes prominent, rather small, viewed from above subpedunculate and reniform; frontal costa strongly sinuate between the eyes, rather widely furcillate, not forked above the paired ocelli, the rami compresso-elevated between the antennae; paired ocelli placed nearly on a line with the lower border of the eyes; antennae rather short, filiform and inserted below the eyes. Pronotum truncate anteriorly, subtectiform forward. deplanate posteriorly, hind process abbreviated and truncate at the apex; median carina compressed, strongly elevated between the shoulders; humeral angles wanting; lateral carinae of the posterior process compressed; posterior angles of the lateral lobes of the pronotum oblique, the angle little prominent outwards and obliquely truncate behind. Elytra and wings wanting; legs elongate; the anterior and middle femoral margins undulate; posterior femora armed with denticles on the external longitudinal carina, the middle denticle compressed obtuse triangularly elevated; hind tibiae armed with spines; the first joint of the posterior tarsi strongly longer than the first, the three pulvilli often planate below and equal in length.

The type is *Amphinotus pygmaeus*, sp. nov.

This genus recalls the Cladonotinae in some respects, yet it is near *Mazarredia*, Bol. It differs in the sessile eyes, wider vertex, lower position of the paired ocelli, absence of the humeral angles, less laminate posterior angles of the lateral lobes of the pronotum, the absence of elytra and wings, and long first joint of the hind tarsi.

Amphinotus pygmaeus, sp. nov.

Body very small, one of the smallest known Tettigids; coloured greyish, with two black bars marking the sides at the base of the hind process, divided by an oblique lighter line. Head little exserted; vertex very wide, front not advanced as far as the eyes, widened forward between the anterior carinulae, about twice the width of one of the eyes, bifossulate forward, and bearing small submamillate ridges just behind the fossae, frontal carinulae rounded, but abruptly terminated at the inner sides of the eyes

and angulate, but not elevated above the eyes; median carina of the vertex compressed-rounded, little produced; frontal costa in profile strongly sinuate between the eyes, little protuberant between the antennae. Pronotum truncate anteriorly, or barely obtuse angulate; dorsum little compressed at the sides; the short prozoal carinulae behind the anterior margin distinctly compressed, elevated; median carina of the pronotum thinly compressed subcrisate, highest forward between the sulci, sloping forward and little sloping backward; hind process strongly abbreviated, truncate, with the lateral angles obtuse, on each side of process bearing a compressed convex carina: humeral angles wanting, but instead the dorsum bearing an expressed lineate tubercle on each side, and two between the shoulders; posterior angles of the lateral lobes oblique, little prominent laterally and obliquely truncate behind. Anterior and middle femoral margins undulate; posterior femoral carinae bidentate on the outer face, the middle denticle larger, compressed, and produced, the superior and inferior margins entire; hind tibiae armed with spines and narrow; the first joint of the hind tarsi nearly twice the length of the third.

Entire length of male and female, 5-7.5 mm.; pronotum 3-4 mm.; posterior femora 3.7-4 mm.

Habitat.—Hakgala, Ceylon, Mar. 1907 (*E. E. Green*); Punduluoya, Ceylon, Feb. 1899. Two adults and a larva in the author's collection.

Genus *Mazarredia*, Bolivar.

Table for separating the Indian species.

1. Disc of pronotum above strongly unequal, somewhat elevated between the shoulders and bearing high subcarinate tubercles.
2. Dorsum of pronotum behind the shoulders profoundly fossulate.
3. Frontal costa not at all sinuate between the eyes.
4. Posterior angles of the lateral lobes of the pronotum little produced, apex subrounded; elytra oblong ovate; length of male and female pronotum 17.2-17.8 mm. *inequalis*, Brunner.
4. 4. Posterior angles of the lateral lobes of the pronotum widely dilated, subobtusely-truncate; elytra elliptical acuminate toward the apices; median carina of pronotum forward between the sulci strongly gibbose-crenulate; length of female pronotum 13.5 mm. *singlaensis*, sp. nov.
- I. 1. Disc of pronotum between the shoulders lower.

2. 2. Dorsum of pronotum behind the disc distinctly though moderately fossulate.
3. 3. Frontal costa sinuate between the eyes.
5. Median carina of the pronotum lightly cristate before the shoulders, but depressed in front; posterior angles of the lateral lobes of the pronotum little expanded, obtuse; length of male and female pronotum 13.5-15.5 mm *sikkimensis*, Bolivar.
5. 5. Median carina of the pronotum subcristate before the shoulders, but not depressed in front; posterior angles of the lateral lobes of pronotum little produced, obtuse; length of female pronotum 17 mm. *sculpta*, Bolivar.
6. Disc of the pronotum plain, convex between the shoulders; median carina lightly and subequally elevated.
7. Vertex nearly twice the width of one of the eyes; (8 and 8.8).
8. Pronotal process subulate, surpassing the hind femoral apices; length of female pronotum 14.7 mm. *lativertex*, Brunner.
8. 8. Pronotal process not reaching to the knees of the hind femora; length of female pronotum 10.5 mm. *ghumtiana*, sp. nov.
9. Head little exerted, lateral carinulae not angulate or cuspidate.
10. Stature very small, body apterous but with small elytra; vertex subnarrower than one of the eyes, not at all produced; pronotum of male 5 mm., of female 7.3 mm. *perplexa*, sp. nov.
10. 10. Stature larger.
7. 7. Vertex subwider than one of the eyes.
11. Pronotum above granose, subrugose; eyes strongly exerted; length of pronotum 12 mm. *laticeps*, Bolivar.
11. 11. Pronotum above granose, and bearing irregular lineate tubercles on the process; eyes moderately exerted; frontal costa strongly protuberant between the antennae; length of pronotum male and female 14-16 mm. *dubia*, Hancock.
- Length of pronotum male and female 13-15 mm. *convergens*, Brunner.
6. 6. Disc of the pronotum deplanate.
12. Median carina of the pronotum gibbose only between the sulci forward; dorsum rugulose; vertex strongly wider

- than one of the eyes; length of female pronotum 13.5 mm. .. *latifrons*, Hancock.
12. 12. Median carina of the pronotum behind the anterior margin forward compressed-elevated, cristate and entire, vertex very little wider than one of the eyes; length of female pronotum 13 mm. *cristulata*, Bolivar.
9. 9. Head distinctly exerted.
13. Vertex on each side bearing a minute angulate lobe, narrowed toward the front; antennae inserted far below the eyes; elytral apices yellow; lateral lobes of pronotum with the posterior angles outwardly produced, obtuse; length of female pronotum 11.8 mm. *ophthalmica*, Bolivar.
13. 13. Vertex on each side cuspidate; head little exerted; pronotum above rugulose, carinae subacute; dorsum depressed behind the shoulders; length of male and female pronotum 10-11.8 mm. *insularis*, Bolivar.

***Mazarredia inequalis*, Brunner.**

Brunn., Ann. Mus. Genova, xxxiii, p. 106, pl. 5, fig. 39, 1893.

Habitat.—Burma (*Brunner*).

***Mazarredia singlaensis*, sp. nov.**

Near *inequalis*, Brunner. Yellowish-grey sparingly marked with fuscous. Body rugose; vertex very little wider than one of the eyes, subnarrowed forward, not at all produced at the middle, imperfectly marginate, elongate fossulate on each side of the mid-carinula; frontal costa not sinuate between the eyes but depressed, between antennae distinctly protuberant, viewed in front rather widely sulcate, branching above the paired ocelli, in profile sinuate at the median ocellus; antennae inserted little below the eyes; palpi compressed and white. Pronotum deplanate, above coarsely granulate and sparingly tuberculate; dorsum between the shoulders moderately dilated; median carina of the pronotum very unequal, forward between the sulci compressed-elevated in a rough gibbosity which gradually slopes forward, uneven, and subdepressed just behind the front border, strongly and abruptly sinuate and crenulate behind, the median carina posteriorly sinuate and subtuberculate; the dorsum between the shoulders little elevated, and bearing on each side of the middle an elongate elevated carinula; behind the shoulders strongly fossulate; posterior angles of the lateral lobes expanded laminate, the angle obliquely truncate behind, the apex somewhat prominent; elytra

subelliptical; wings reaching to the pronotal apex: the four anterior femora compressed, margins of anterior above and below undulate: middle femoral margins above and below subtrilobate, minutely crenulate: hind femoral margins above serrulate, and sublobate, inferior carina very narrow, thin, and minutely undulate-crenulate; the third pulvilli of the first joint of the hind tarsi equal in length to the first and second combined, the first and second speculate, the first minute.

Entire length of female 14 mm.; pronotum 13 mm.; post. fem. 6 mm.

Habitat.—Singla, Darjiling Dist., 1500 ft., June 1913 (*Lord Carmichael's coll.*), Ind Mus. coll.

Mazarredia sikkimensis, Bolivar.

Bol., Bol. Soc. Espan., ix, pp. 398, 399, 1909.

Habitat.—Sikkim, E. Himalayas. Ind. Mus. coll.

Mazarredia sculpta, Bolivar.

Bol., Ann. Soc. Ent. Belg., xxxi, p. 238, 1887; Brunn., Ann. Mus. Genova, xxxiii, p. 107, 1893; Hanc., Trans. Ent. Soc. London, p. 405, 1908.

Habitat.—Sukna, Darjiling Dist., 1000 ft., May 1913 (*Lord Carmichael's coll.*), Ind. Mus. coll. Also reported from Tenasserim; Pegu; Assam; Oriental India.

Mazarredia lativertex, Brunner.

Brunn., Ann. Mus. Genova, xxxiii, p. 108, pl. 5, fig. 41, 1893.

Habitat.—Burma (*Brunner*).

Mazarredia ghumtiana, sp. nov.

Near *lativertex*, Brunner. Ferruginous-fuscous. Head large; body somewhat smooth granulose, devoid of a gibbosity and elevated tubercles. Vertex very wide, nearly twice the width of one of the eyes. horizontal, on each side fossulate, the lateral carinulae rounded, the front margin barely advanced beyond the eyes; frontal costa scarcely sinuate between the eyes; antennae inserted below the eyes. Pronotum truncate anteriorly, transversely rounded before the shoulders; hind process cuneate, not reaching or barely extended to the hind femoral knees; dorsum above deplanate, little convex between the shoulders, subfossulate behind the shoulders; median carina very low undulate; prozonal carinae behind the front border merely granulose lines convergent backward, not at all expressed; antehumeral carinae on each side low and not at all compressed, behind the shoulders laterally bicarinate; the hind process above toward the apex tricarinate and planate, and above little rugulose; posterior angles of the lateral lobes oblique, very little prominent, subnarrowed, obliquely trun-

cate behind; elytra very small, elongate, apices rounded; wings present, but not reaching to the pronotal apex; anterior and middle femora subentire, granose; hind femora large, margins granose, minutely serrulate, antegenicular lobe acute; the three pulvilli of the first joint of the hind tarsi subequal in length, subobtusate.

Entire length of female 11.5 mm. (to end of pronotum): pronotum 10.5 mm.; hind femora 8 mm.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, Mar. 27, 1910 (*F. H. Gravely*); a larval specimen which may be this, or an allied species, is from Kurseong, 5000 ft., E. Himalayas (*N. Annandale*). The latter is labelled apparently by Kirby: "*Coptotettix acuteterminatus*, Brunn."

***Mazarredia perplexa*, sp. nov.**

Stature small; coloured grey obscurely variegated with fuscous; head little exserted; eyes prominent somewhat elevated; vertex subnarrower than one of the eyes, narrowed forward, not at all produced, elongate fossulate on each side, laterally the carinulae little roundly elevated; antennae inserted distinctly below the eyes; paired ocelli placed between the lower third of the eyes; frontal costa depressed above between the eyes, rounded and protuberant between the antennae. Pronotum truncate anteriorly, posteriorly abbreviated, distinctly flattened backward and cuneate produced only to the knees of the hind femora; median carina little compresso-elevated forward between the sulci, depressed-undulate between and behind the shoulders; prozonal carinae forward behind the front margin parallel or subdivergent backward; on either side of the disc bicarinate; the lateral carinae becoming obsolete toward the apex; hind process little rugulose on the base; posterior angles of the lateral lobes subrounded truncate, not at all laminate outward nor prominent; elytra small and elliptical; wings wanting or undeveloped; anterior and middle femora elongate, margins entire; the third pulvilli of the first joint of the hind tarsi as long as the first and second combined, the first and second spinose.

Entire length of male 6.5 mm.; female 8.5 mm.; pronotum 5.7 mm.; hind femora female 5.2 mm.

Habitat.—Sikkim (*Knyvett*). Ind. Mus. coll.

***Mazarredia dubia*, Hancock.**

Hanc., Mem. Dept. Agric. India, iv, p. 139 1912.

Habitat.—Bengal, Proobsering, Lebong, Darjiling, 5000 ft. Author's coll.

***Mazarredia convergens*, Brunner.**

Brunn., Ann. Mus. Genova, xxxiii, p. 107, pl. 5, fig. 40, 1893.

Habitat.—Burma (*Brunner*).

Mazarredia laticeps, Bolivar.

Bol., Bol. Soc. Espan., ix, p. 399, 1909.
Habitat.—Upper Assam (*Bolivar*).

Mazarredia latifrons, Hancock.

Hanc., Mem. Dept. Agric. India, iv, p. 139, 1912.
Habitat.—Bengal, Proobsering, Lebong. Darjiling Dist.,
5000 ft. Author's coll.

Mazarredia cristulata, Bolivar.

Bol., Ann. Soc. Ent. France, lxx, p. 584, 1902.
Habitat.—S. India (*Bolivar*)

Mazarredia ophthalmica, Bolivar.

Bol., Bol. Soc. Espan., ix, p. 399, 1909.
Habitat.—“Sibsagar, N. E. Assam (S. E. P.)” (*Bolivar*).

Mazarredia insularis, Bolivar

Bol., Ann. Soc. Ent. Belg., xxxi, p. 239, 1887: Hanc., Spol.
Zeylan., ii, p. 155, pl. 2, fig 7, 1904.
Habitat.—Kandy, Ceylon, July 1910. Ind. Mus. coll.

Genus **Xistra**, Bolivar.**Xistra stylata**, Hancock.

Hanc., Trans. Ent. Soc. London, p. 231, 1907.
Habitat.—Ceylon. Author's coll.

Xistra dubia, Brunner.

Brunn., Ann. Mus. Genova, xxxiii, p. 108, pl. 5, fig. 42,
1893.

Xistra sikkimensis, sp. nov.

Near *sagittata*, Bolivar. Colour pale ochreous above, with two narrow black markings behind the shoulders. Head little exserted; eyes elevated higher than the dorsum of pronotum; vertex subequal in width to one of the eyes, little narrowed forward, middle carinate, subtruncate in front, the anterior carinulae laterally reflexed, angulate-subcuspidate, but not elevated higher than the eyes; antennae inserted below the eyes; paired ocelli placed between the middle of the eyes; frontal costa moderately produced between the eyes, arcuate, slightly sinuate above between the eyes, and distinctly sinuate below at the median ocellus. Pronotum lengthily subulate; dorsum tectiform, punctate and granose; median carina of the pronotum percurrent, little compressed, sinuate behind the anterior border, and distinctly

compressed forward on either side at the median sulcus, and the dorsum strongly depressed; elytra ovate, apices rounded; wings caudate; middle femora elongate, margins entire; posterior angles of the lateral lobes of the pronotum hebitate.

Entire length of female 14 mm.; pronotum 10.8 mm.

Habitat.—Sikkim. Ind. Mus. coll.

This species differs from *sagittata* in the subcuspidate frontal carinulae of the vertex; in the tectiform dorsum, and slightly elevated undulate median carina forward. It is not at all typical of the genus *Xistra*, and approaches *Paratettix* in some respects. This species, like *sagittata* and *tricristata* belong to a series by themselves which really form a subgenus.

Genus *Xistrella*, Bolivar.

Bol., Real. Soc. Espan. Nat. Hist., ix, pp. 400, 401, 1909.

Xistrella dromadaria, Bolivar.

Bol., Real. Soc. Espan. Nat. Hist., ix, p. 401, 1909.

Habitat.—Sikkim (*L. M.*). Indian Museum coll.

The type came from the same locality. The female in the Ind. Mus. coll. has the pronotum lengthily subulate, and the median carina between the shoulders strongly elevated in an obtuse gibbosity. The length of the pronotum 17 mm.

Genus *Lamellitettix*, Hancock.

Lamellitettix fletcheri, sp. nov.

Near *acutus*, Hancock. Differing in the smaller stature: the vertex on either side more acute cuspidate; the frontal costa less protuberant between the antennae; median carina of the pronotum bigibbulate, the first gibbosity very small and rounded placed between the sulci forward, the second gibbosity joined on either side with a strongly compressed subtransverse ruga; median carina on the hind process sinuate. The strongly elevated carinate tubercles on each side between the shoulders in *acutus* reduced in *fletcheri* to short compressed carinulae; the posterior angles of the lateral lobes of the pronotum little acute produced in this species, whereas, in *acutus*, they are strongly transversely acute produced, the triangulate spine on each side having a broader base.

Entire length of male 9.5 mm; pronotum 8.7 mm; hind femora 4.5 mm.

Habitat.—Anamalais, Castlecroft Estate, India, 400 ft., Jan. 23, 1912 (*T. B. Fletcher*). Author's coll.

Lamellitettix pluricarinatus, Hancock.

Hancock, Trans. Ent. Soc. Lond., p. 404, 1908.

Habitat.—Deltota, Ceylon. Author's coll.

Genus *Hyboella*, nov. (*Coptotettix* in part).

Body more or less crassate; head not at all exerted; vertex wider than one of the eyes, narrowed forward, granose, imperfectly marginate, on either side bearing a very small looped carinula, more distinct next to the eyes, very lightly fossulate, middle minutely carinate; frontal costa produced, often depressed between the eyes, compressed-arcuate between the antennae; eyes more or less conoidal in form; paired ocelli placed little below the middle, or between the middle of the eyes; antennae filiform, of moderate length, and inserted between the extreme lower part of the eyes, or barely below. Pronotum anteriorly truncate, or subconvex, or barely produced at the middle: hind process posteriorly cuneate, not extended beyond the knees of the hind femora; or subulate and extended beyond the apices of the hind femora; median carina of the pronotum compressed elevated forward between the sulci, the dorsum tectiform forward, behind the shoulders depressed or planate, the median carina often bearing tubercles: middle of front border not at all or little produced over the occiput; posterior angles of the lateral lobes of the pronotum laminate dilated, subtransversely truncate behind, the angles subacute produced, or the posterior angles more or less reflexed outwards and obliquely truncate behind, rarely not reflexed outwards. Elytra and wings wanting, or when present the elytra elongate lanceolate, narrowed toward the apices, and the wings abbreviated, or extended beyond the pronotal apex. Anterior femora elongate, margins entire; middle femoral margins entire or undulate; posterior femora distinctly crassate, strongly widened toward the base, external face above bearing large tubercles, the superior carina minutely serrulate, entire, or bearing denticles toward the apices; the first joint of the posterior tarsi distinctly longer than the third.

This genus differs from *Coptotettix*, Bolivar, in the stouter stature, the often depressed frontal costa between the eyes; the position of the antennae; the dilated or reflexed posterior angles of the lateral lobes of the pronotum, which are truncate behind; the compressed tectiform pronotum forward; and in the frequent imperfect development or absence of the wings. In the character of the posterior angles of the lateral lobes, this genus resembles *Mazarredia* somewhat. It includes a number of species in India, and some species in the Oriental Region outside of India. The type is *Hyboella tentata*, sp. nov.

Table for separating the Indian species.

1. Elytra and wings wanting.
2. Antennae inserted below the eyes; disc of pronotum elevated; lateral lobes of pronotum strongly arcuate backwards; pronotum of male 9.3 mm. *latifrons*, Brunner.

- Stature smaller, pronotum of male
6.5 mm. *acuteterminata*, Brunner.
2. 2. Antennae inserted between the lower part of the eyes; lateral lobes of pronotum moderately expanded, the posterior angles obliquely truncate; disc of pronotum very little elevated; pronotum of female 10 mm. *nullipennis*, Hancock.
1. 1. Elytra present, of moderate size.
3. Pronotum viewed in front not quadrate.
4. Dorsum of pronotum somewhat smooth, tumid; median carina of the pronotum not produced at the front border; body crassate; pronotum of male and female 10-11 mm. *tumida*, Hancock.
4. 4. Dorsum of pronotum tuberculate, strongly tectiform forward; front border subangulate; the median carina of pronotum little produced; posterior angles of the lateral lobes of the pronotum widely dilated, triangulate produced; pronotum of male and female 11-13.8 mm. *tentata*, sp. nov.
- Front border of pronotum truncate;
pronotum of female 14 mm. *dilatata*, de Haan.
3. 3. Pronotum viewed in front subquadrate, above tectiform, sides concave; body strongly crassate; hind femora wide; frontal costa barely elevated; hind process of pronotum cuneate; wings reaching to the apex of pronotal process or little beyond; pronotum of male and female 12-15 mm. *obesa*, sp. nov.
5. Vertex viewed from above planate, little produced, in profile angulate produced; eyes strongly conoidal; posterior process of pronotum subulate distinctly surpassing the hind femoral apices; stature large; pronotum of female 17.5 mm. *angulifrons*, sp. nov.
5. 5. Vertex viewed from above fossulate on each side; stature smaller; frontal costa arcuate produced before the eyes.
6. Posterior angles of the lateral lobes of pronotum oblique, apices obtuse; pronotum little wide between the shoulders, behind the shoulders subfossulate; median carina arcuate forward and backward sinuate-tuberculate; pro-

notum of male and female 10.5-12.5
mm.

conioptica, sp. nov.

6. 6. Posterior angles of the lateral lobes of the pronotum subexpanded outwardly, behind widely truncate; pronotum of male and female 11.5 and 9 mm. *problematica*, Bolivar.

Hyboella latifrons, Brunner.

Coptotettix latifrons, Brunn., Ann. Mus. Genova xxxiii, p. 112, pl. 5, fig. 44, 1893.

Habitat.—Burma (*Brunner*).

Hyboella acuteterminata, Brunner.

Coptotettix acuteterminatus, Brunn., Ann. Mus. Genova, xxxiii, p. 112, 1893.

Habitat.—Pegu (*Brunner*).

Hyboella nullipennis, Hancock.

Coptotettix nullipennis, Hanc., Records Ind. Mus., viii, p. 314, pl. xv, fig. 2, 1913.

Habitat.—Janakmukh, India (*Kemp*). Ind. Mus. coll.

Hyboella tumida, Hancock.

Coptotettix tumidus, Hanc., Records Ind. Mus., viii, pp. 313, 314, pl. xv, fig. 3, 1913.

Habitat.—Dibrugarh, N.-E. Assam (*Kemp*). Ind. Mus. coll.

Hyboella tentata, sp. nov.

Body crassate; face large: head not at all exerted, little retracted under the pronotum. Colour yellowish-ferrugineous, or subinfusate. Vertex wider than one of the eyes, narrowed forward, subampliate backward, in front imperfectly marginate, open either side of the mid-carina, bearing very small subcompressed flexed carinulae laterally next to the eyes, and little subfossulate on each side; antennae inserted between the lower margin of the eyes; paired ocelli conspicuously placed before the middle of the eyes; frontal costa compressed arcuate between the antennae, depressed above, and sinuate at the median ocellus. Pronotum tuberculose granose above, the dorsum tectiform forward, the disc somewhat tumose, posteriorly planate; hind process acute cuneate abbreviated and not reaching to, or extended to the hind femoral knees; median carina of pronotum forward crassate and compressed-elevated arcuate, from the front to a point backward above the articulation of the hind femora, backward very low and bearing compressed tubercles; at the front margin the median carina crassate and little obtuse produced over the occiput; prozonal carinae behind the anterior border small, imperfectly developed;

humeral angles strongly depressed; posterior angles of the lateral lobes of the pronotum strongly laminate dilated laterally, apex subacute, widely transversely truncate behind; elytral sinus shallow; elytra narrow, elongate, lanceolate; wings undeveloped, but not entirely wanting; anterior femora elongate, margins entire, subundulate; middle femora little compressed, margins undulate; hind femora strongly crassate, very wide toward the base, superior margin granose and minutely serrulate, subbidentate toward the knees, the antegenicular spine acute; hind tibiae with both margins armed with strong spines; first article of the posterior tarsi strongly longer than the third, the third pulvillus as long as the first and second combined, planate below, the first and second spiculate.

Entire length of male and female 12-14.5 mm. (to end of process); pronotum 11-13.8 mm.; posterior femora 8-9 mm.

Habitat.—Sibsagar, N.-E. Assam (*S. E. Peal*); Upper Assam (*Doherty*).

Two examples are labelled with the name "*Tettix dilatatus*." This species is quite different from *dilatata*, de Haan, as evidenced by comparison with specimens of this species from Java in my collection.

***Hyboella dilatata*, Haan.**

Acridium (Tetrix) dilatatum, de Haan, Bijdr., pp. 167, 169, pl. xxii, fig., 1843.

Habitat.—Carin Ascii (Brunner).

***Hyboella obesa*, sp. nov.**

Body strongly crassate, above granose, little rugose; head little retracted under the pronotum; face large; eyes strongly conoidal in profile. Colour fuscous, variegated with dull yellow. hind femora often bearing vertical bars of yellow. Vertex wider than one of the eyes, barely emarginate in front, median carina very small and low, slightly fossulate on each side; paired ocelli placed scarcely below the middle of the eyes; antennae rather short, and inserted barely between the lower margin of the eyes, apical articles of palpi compressed; frontal costa barely arcuate elevated between the antennae, and little depressed between the eyes; vertex in profile angulate. Pronotum anteriorly very obtuse angulate, when viewed in front the body quadrate, on either side of pronotum concave, and above tectiform: median carina of pronotum in profile elevated forward, and arcuate compressed from the front border to a point backward above the articulation of the hind femora, then strongly depressed irregularly sinuate backward; the dorsum backward planate, broadly fossulate opposite the elytral apices; hind process acute cuneate, the lateral carinae compressed, the apex reaching to the extremities of the hind femora or surpassing them; humeral angles widely arcuate, the humeral carinae subobliterated, not at all compressed; elytra sinus shallow; posterior angles of the lateral lobes of the pronotum widely

dilated, obliquely truncate behind; elytra elongate, widened at the middle, acuminate toward the apices; wings shortened, not reaching to the pronotal apex, or little surpassing the apex. Anterior and middle femora elongate, granulose, margins subentire; middle femora little compressed bearing a row of rounded tubercles at the middle; hind femora strongly crassate, very wide, the superior carina entire, minutely subsulcate serrulate, below entire; hind tibiae black, pale annulate at the anterior fourth; margins narrow and armed with strong spines; the first joint of the hind tarsi distinctly longer than the third, the first and second pulvilli of the first joint acute, the third longer than the second.

Entire length of male and female 12.5-16 mm.; pronotum 12-15 mm.; posterior femora 8-9 mm.

Habitat.—Ghunti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1911 (*F. H. Gravely*).

A series of adults and larvae in the Indian Museum. The nymphs have the dorsum of pronotum strongly compressed, the median carina rounded-cristate as in some of the adult Cladonotinae.

Hyboella angulifrons, sp. nov.

Body moderately crassate, above granose-rugose; head very little exserted, in profile angulate; face oblique; eyes conoidal; colour fuscous, variegated with yellow on the hind process and hind femora; vertex viewed from above little produced and rounded at the sides, granose, wider than one of the eyes, widened backward and subampliate, little ascendant forward; antennae yellow, inserted between the extreme lower part of the eyes; paired ocelli placed little below the middle of the eyes; frontal costa slightly elevated arcuate between the antennae. Pronotum very little convex at the front margin; dorsum deplanate, between the shoulders little convex, behind the shoulders depressed and broadly fossulate; hind process above planate, rugose and subulate extended backward beyond the hind femoral apices; median carina of the pronotum compressed slightly arcuate and crassate forward extending only as far backward as the sulci; posteriorly indistinct but irregularly compressed-tuberculate: lateral carinae of process compressed; humeral angles very obtuse; posterior angles of the lateral lobes of the pronotum oblique very little dilated, the apices obtuse, the margin behind obliquely truncate; elytra lanceolate, widest at the middle, acuminate toward the apices; wings extended backward to the pronotal apex; anterior and middle femora elongate; margins of the anterior entire; margins of the middle femora undulate; hind femora crassate, the superior carina minutely serrulate, at the anterior half strongly rounded, the inferior margins entire; the first article of the posterior tarsi longer than the third; the first and second pulvilli acute, the third distinctly longer than the second.

Entire length of female 17.5 mm.; pronotum 16.5 mm.; posterior femora 9 mm.

Habitat.—Dawna Hills, Lower Burma, “third camp to misty hollow” 400–2400 ft., Nov. 22–30, 1911 (*F. H. Gravely*). Ind. Mus. coll.

This species is not so robust in stature as *obesa*, the vertex is more angulate in profile; the median carina of the pronotum forward is lower; and the hind process is lengthily subulate, instead of shortened and cuneate.

***Hyboella conioptica*, sp. nov.**

Body slightly robust; colour greyish, the hind femora obscurely marked with yellow; head not at all exerted, in profile subrounded; vertex nearly equal in width to one of the eyes, not at all advanced beyond the eyes, narrowed forward and fossulate on each side, little ampliate backward; antennae inserted between the lower part of the eyes; paired ocelli placed between the middle of the eyes; frontal costa viewed in front sulcate above the paired ocelli, in profile arcuate produced before the eyes. Pronotum anteriorly truncate or very slightly convex, posteriorly subulate extended beyond the hind femoral apices; dorsum rather smooth granulate-tuberculate, between the shoulders convex, but forward subtectiform, and behind the shoulders planate; median carina very low, elevated forward and little arcuate behind the anterior margin between the sulci; depressed between the humeral angles, and depressed sinuate backward, irregularly compressed; humeral angles obtuse and roundly depressed; posterior angles of the lateral lobes of the pronotum little dilated, obliquely truncate behind, the apices dull; elytra elongate, widened at the middle, narrowly rounded at the apices; wings extended barely beyond the pronotal apex; anterior and middle femora elongate, little compressed, margins entire; posterior femora stout, externally granose, margins entire; the four anterior tibiae and tarsi black and pale annulate; first joint of the hind tarsi longer than the third, the first and second pulvilli acute, the third longer than the second.

Entire length of male and female 11.5 mm.; pronotum 10.5–12.5 mm.; posterior femora 5.6–7 mm.

Habitat.—Singla, Darjiling Dist., 1500 ft., Mar. 1913 (*Lord Carmichael's coll.*); Assam (*H. H. Godwin-Austen*). Ind. Mus. coll.

***Hyboella problematica*, Bolivar.**

Coptotettix problematica, Bol., Real. Soc. Espan., ix, p. 401. 1909.

Habitat.—Upper Assam (*Bolivar*).

TETTIGINÆ.

Genus ***Teredorus***, Hancock.

Hancock, Gen. Ins. Orth. Acrid. Tetr., pp. 51, 52, 1906.

The genus *Teredorus*, Hancock, was based on a Peruvian (S. American) species, *stenofrons*. The new Indian species described

below have the frontal costa somewhat depressed, whereas, in *stenofrons*, it is roundly protuberant between the antennae; the dorsum of pronotum is rounded between the shoulders instead of being convex as in *carmichaeli*.

***Teredorus carmichaeli*, sp. nov.**

Near *stenofrons*, Hancock. Body wholly white, or grey and pale variegated, tibiae fuscous, annulate with white, wings black or infumate. Head not at all exserted, viewed from above very small; vertex strongly contracted forward drawing the eyes very near together, minutely tricarinate; frontal costa barely subproduced beyond the eyes, sinuate at the median ocellus; antennae inserted little below the eyes; eyes distinctly globose, pronotum smooth glabrous, minutely granose, subcylindrical forward, widened between the shoulders; median carina very indistinct; prozonal carinae behind the front border mere obsolete lines and parallel; antehumeral carinae indistinct; hind process long subulate surpassing the hind femoral apices; posterior angles of the lateral lobes of the pronotum turned down, the apices rounded or subtruncate; elytra moderately large, externally reticulate, rather wide forward and acuminate backward and narrowly rounded at the apices; wings extended to the pronotal apex; the four anterior femoral margins entire, minutely serrulate; middle femora little compressed and externally bicarinate; posterior femoral margins entire, minutely serrulate, the antegenicular denticle acute; the three pulvilli of the first joint of the hind tarsi equal in length, the first and third tarsal joints equal in length.

Entire length of female 17 mm.; pronotum 16 mm.; hind femora 7 mm.

Habitat.—Singla, Darjiling Dist., 1500 ft., Apr., June, 1913 (*Lord Carmichael's coll.*). Ind. Mus. coll.

***Teredorus frontalis*, sp. nov.**

Near *carmichaeli*, differing as follows: stature smaller, body coloured fuscous, variegated with ochre, the underparts, fusco-variegated, lower half of the lateral lobes of the pronotum pale ochre; the four anterior femora little more compressed, subrugose; the hind femora stouter; elytra smaller and punctate, not so reticulate; the antennae inserted little lower; the hind process of the pronotum not so long subulate, but the wings extended to the pronotal apex.

Entire length of female 11 mm.; pronotum 10.5 mm.; posterior femora 5.8 mm.

Habitat.—Dharampur, Simla Hills, 5000 ft., May, 1907 (*N. Annandale*).

***Teredorus ridleyi*, Hancock.**

Systedeus ridleyi, Hanc., Trans. Ent. Soc. Lond., p. 401, 1908.

Habitat.—Singapore, Botanical Gardens (*Hancock*).

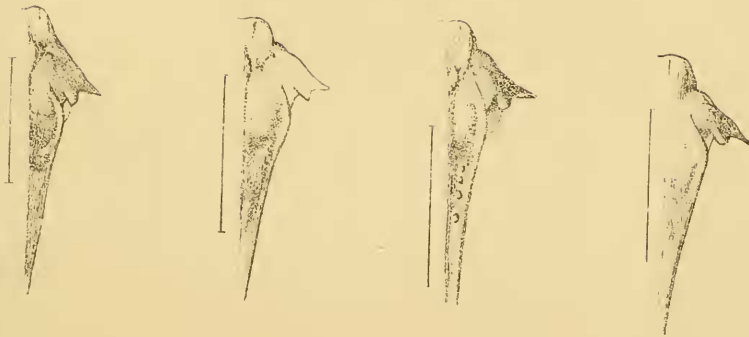
EXPLANATION OF PLATE XIV.

Lateral lobes of the pronotum in *Criotettix*. Line indicates length of pronotum.

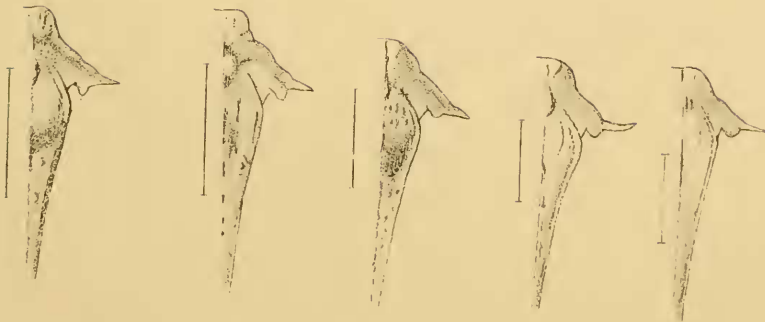
- FIG. 1. *Criotettix montanus*, Hanc.
., 2. *Criotettix rugosus*, Bol.
., 3. *Criotettix aequalis*, Hanc.
., 4. *Criotettix dohertyi*, sp. nov.
., 5. *Criotettix pallidus*, sp. nov.
., 6. *Criotettix annandalei*, sp. nov.
., 7. *Criotettix maximus*, Hanc.
., 8. *Criotettix grandis*, Hanc.
., 9. *Criotettix graveleyi*, sp. nov.
., 10. *Criotettix flavopictus*, Bol.
., 11. *Criotettix extremus*, Hanc.
., 12. *Criotettix orientalis*, Hanc.
., 13. *Criotettix spinilobus*, Hanc.
., 14. *Criotettix tricarinatus*, Bol.



1. 2. 3. 4. 5.



6. 7. 8. 9.



10. 11. 12. 13. 14.

Genus *Paratettix*, Bolivar.*Table for separating the Indian species.*

1. Wings strongly caudate, 3.5-5 mm. longer than the pronotal process.
2. Dorsum wide between the shoulders; body crassate; frontal costa little produced, arcuate.
3. Median carina of pronotum percurrent, not at all undulate; vertex equal in width to one of the eyes; dorsum of pronotum rugulose, slightly scabrous; posterior femora above strongly serrulate toward the apices, bearing an acute elevated denticle; pronotum of male and female 11.8-14 mm. *hirsutus*, Brunner.
3. 3. Median carina of pronotum compressed subgibbose forward behind the front border, and depressed just before the shoulders; vertex wider than one of the eyes; dorsum rugose-tuberculose, subtumid forward; the front border obtuse-angulate; hind femoral carinae above toward the knees minutely subserrulate, antegenicular denticle little prominent; pronotum of female 12 mm. *rotundatus*, sp. nov.
2. 2. Dorsum much narrower between the shoulders, body slender; vertex distinctly narrower than one of the eyes; median carina of pronotum percurrent, little compressed, and longitudinally low arcuate forward, highest between the shoulders, barely sinuate before the shoulders; head not at all exerted; pronotum of female 8.6 mm. *latipennis*, sp. nov.
1. 1. Wings caudate but less than 3 mm. longer than the pronotal apex, or abbreviated.
4. Median carina percurrent, undulate before the shoulders, but not behind; vertex equal in width to one of the eyes; posterior tibiae fuscous at the basal part, the apical part pale; pronotum of female 11 mm. *semihirsutus*, Brunner.
4. 4. Median carina of pronotum distinctly undulate, compressed gibbose forward between the sulci; vertex subnarrower or subequal to one of the eyes.
5. Hind process of pronotum acute, not ex-

- tended beyond the hind femoral apices;
 pronotum of male and female 7·95
 mm. *curtipennis*, Hancock.
5. 5. Hind process of pronotum long subulate,
 extended beyond the hind femoral api-
 ces; pronotum of female 12·8 mm.;
 wings 1·5 mm. longer than the pronotum *alatus*, sp. nov.

***Paratettix hirsutus*, Brunner.**

Brunn., Ann. Mus. Genova, xxxiii, p. 110, fig. 43, 1893.

Habitat.—Sibsagar, N. E. Assam (*S. E. Peal*). Ind. Mus. coll.

***Paratettix rotundatus*, sp. nov.**

Colour ferruginous; body moderately stout, hirsute below, head not at all exserted, eyes and vertex not at all elevated; vertex wider than one of the eyes, not produced, on either side fossulate, little ampliate behind the fossae on the occiput, frontal carinae laterally reflexed and little rounded compressed; paired ocelli placed little in advance of the eyes between the middle; antennae inserted barely on a line with the lower border of the eyes; frontal costa moderately arcuate produced beyond the eyes. Pronotum above rugose-tuberculose, anteriorly very obtuse angulate, posteriorly acute subulate, little surpassing the hind femoral apices; dorsum forward between the shoulders little tumid, backward planate; median carina behind the anterior border compressed, little arcuate subgibbose, between the shoulders depressed, backward very slightly subundulate compressed; humeral angles obtuse depressed; lateral carinae posteriorly little compressed on base of process; the two prozonal carinae behind the front margin parallel; posterior angles of the lateral lobes of the pronotum with the apices rounded, and somewhat narrowed; elytra widest near the middle, narrowed toward the apices and rounded; wings strongly caudate, extended 4·5 mm. beyond the pronotal apex in the type; anterior and middle femora elongate and compressed, hirsute, margins subparallel; posterior femora elongate, moderately broad, with a prominent antegenicular denticle, and a minute lobe anterior to it, the superior margin also being minutely serrulate-granose; hind tibiae with two light and two black annulations; the three pulvilli of the first joint of the hind tarsi spiculate, the third pulvillus little longer than the second.

Entire length of female 16·5 mm.; pronotum 12 mm.; posterior femora 7 mm.

Habitat.—Tezpur, Mangaldai Dist., Assam, Oct. 8, 1910 (*Kemp*).

This species resembles *hirsutus*, Brunner, differing in the wider vertex; the compressed subgibbose median carina of the pronotum forward; the wider sulcation of the frontal costa; and in the superior carina of the posterior femora being subentire, but minutely

serrulate, whereas, in *hirsutus* the carina above is strongly serrulate toward the knees and the antegenicular denticle more strongly elevated and acute. Even with these differences however, this may be a variety of *hirsutus*, which fact can only be determined by a study of more extensive series.

***Paratettix latipennis*, sp. nov.**

Stature slender; colour pale ferruginous; body slightly rugose, little hirsute below; head not at all exserted; vertex distinctly narrower than one of the eyes; antennae inserted little below the eyes; frontal costa moderately arcuate produced, very lightly sinuate at the median ocellus. Pronotum anteriorly truncate, posteriorly acute subulate, produced about one millimetre beyond the hind femoral apices; dorsum between the shoulders convex; median carina of the pronotum percurrent, little compressed, and forward forming a low gentle arc, highest between the shoulders, and little compresso-elevated forward between the sulci; humeral angles obtuse angulate; the two short prozonal carinae behind the anterior margin indistinctly divergent backward; posterior angles of the lateral lobes of the pronotum rounded-truncate; elytra moderately small, elongate, apices narrowly rounded, externally reticulate; wings strongly caudate produced nearly 3.5 mm. beyond the pronotal apex in the type; anterior and middle femora little compressed, elongate; middle femoral margins in the female parallel, pilose; posterior femora stout, the apical half of the superior carina minutely serrulate; antegenicular denticle prominent, acute; first article of the hind tarsi longer than the third; the three pulvilli spiculate, the third pulvillus distinctly longer than the second.

Entire length of female 13.8 mm.; pronotum 8.6 mm.; posterior femora 4.8 mm.

Habitat.—Moradabad, U.P., July 21, 1911 (*T. B. Fletcher*).
Author's coll.

***Paratettix semihirsutus*, Brunner.**

Brunn., Ann. Mus. Genova, xxxiii, pp. 110, 111, 1893.

Habitat.—Carin Cheba (*Brunner*).

***Paratettix curtipennis*, Hancock.**

Coptotettix curtipennis, Hanc., Mem. Dept. Agric. India, iv, pp. 146, 147, 1912.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1911 (*F. H. Gravely*). Ind. Mus. coll.

***Paratettix alatus*, sp. nov.**

Colour obscure fuscous; body moderately stout; head not at all exserted; eyes and vertex very little elevated; vertex subequal in width to one of the eyes, anteriorly truncate, frontal carinulae laterally reflexed and rounded-compressed, front not advanced beyond the eyes; antennae inserted below the eyes; paired ocelli

placed little below the middle of the eyes: frontal costa widely sulcate, in profile not produced at the vertex between the eyes, but little arcuate produced between the antennae, sinuate at the median ocellus; face slightly oblique. Pronotum anteriorly truncate, posteriorly lengthily acute subulate; dorsum between the shoulders convex, rugose, backward depressed planate and somewhat rugulose, bearing small tubercles; median carina very thin, gibbose forward between the sulci, depressed and sub-straight between the shoulders, backward depressed and irregularly undulate; the two short prozonal carinae behind the front margin distinctly convergent backward; humeral angles carinate, little compressed; lateral carinae backwards compressed and towards the apex serrulate; posterior angles of the lateral lobes of the pronotum little obliquely dilated, the apices dull, rather widely obliquely truncate behind; elytra oblong, widest behind the middle, but the apices narrowly rounded; wings surpassing the pronotal apex 1·3 mm.; anterior femora elongate, little compressed, the superior carina strongly curved, outer face and below sparingly hirsute; middle femora rather broad, compressed, elongate, sparingly hirsute, margins subundulate; posterior femora moderately stout, externally subscabrous, the apical third above serrulate-lobate, antegenicular lobe acute spinate first article of the hind tarsi longer than the third; the first and second pulvilli acute, subspiniate, the third distinctly longer than the second.

Entire length of female 15 mm.; pronotum 12·8 mm.; hind femora 6·3 mm.

Habitat.—Ghumti, Darjiling Dist., E. Himalayas, 4000 ft., July, 1912 (*F. H. Gravely*).

This species may be the long-wing form of *curtipennis*. It is near *semihirsutus*, but differs in the frontal costa not being produced above between the eyes, and in the distinctly undulate median carina of the pronotum.

Genus *Acrydium*, Geoff.

(*Tettix*; *Tetrix* of authors.)

Acrydium bipunctatum, Linn.

Kirby, Syn. Cat. Orth. Brit. Mus., iii, pp. 39-42, 1910.

Habitat.—Sikkim, Darjiling Dist.; Europe. Indian Mus. coll.

This species was previously reported from India by Bolivar as occurring at Kolaikanal, S. India. Two specimens in the Indian Museum bear perfect resemblance to specimens in my collection from different parts of Europe. Kirby gives the range of habitat as: Europe; North Africa, and North and West Africa.

Acrydium variegatum, Bolivar.

Paratettix variegatus, Bol., Ann. Soc. Ent. Belg., xxxi, p. 280, 1887; *Tettix atypicalis*, Hanc., Spol. Zeylan., ii,

p. 142, 1904; Hanc., Mem. Dept. Agric. India, iv, p. 149, 1912.

Habitat.—Moulmein, Lower Burma, Nov. 16, 1911 (*F. H. Gravely*); Peradeniya, Ceylon, Oct. 1905; Ratnaputa, Ceylon, Apr. 1905 (*E. E. Green*); Singla, Darjiling Dist., 1500 ft.

***Acrydium ceylonicum*, Hancock.**

This is the short-wing form of *variegatum*, *l. c.*, 1904.

Habitat.—Peradeniya, Ceylon. Indian Mus. coll.

***Acrydium indicum*, Bolivar.**

Paratettix indicum, Bol., Ann. Soc. Ent. Belg., xxxi, p. 281, 1887; Hanc., Mem. Dept. Agric. India, iv, p. 150, 1912.

Habitat.—Bihar, Chapra; Gorakhpur; Pupri, Muzaffarpur. Author's coll. "Indes Orientalis" (*Bolivar*).

***Acrydium mundum*, Walker.**

Tettix mundum, Walk., Cat. Derm. Salt. Brit. Mus., p. 827, 1871.

Tettix umbriiferum, Walk., *l. c.*, p. 824; *T. lineiferum*, Walk., *l. c.*; *T. vittiferum*, Walk.; *T. dorsiferum*, Walk.; *T. obliquiferum*, Walk.; *T. nigricolle*, Walk.; *T. balteatum*, Walk.; *T. lineosum*, Walk., *l. c.* 1871.

Habitat.—N. India (*Walker*).

The above species appear to be mere colour varieties of one or two species which I find it impossible to place.¹

***Acrydium tectitergum*, sp. nov.**

Near *subulatum*, Linn. Fuscous or obscure fusco-ferrugineous, granulose; vertex wider than one of the eyes, distinctly produced, carinulae laterally subangularly reflexed, and little compressed, the front border convex, middle carinate, on each side elongate fossulate; eyes moderately small; head in profile obtuse angulate, the face strongly produced, convex, advanced equal to the width of one of the eyes; indistinctly sinuate at the median ocellus; antennae very slender filiform, inserted between the lower border of the eyes and partly below. Pronotum anteriorly very obtuse angulate, posteriorly acute subulate produced beyond the hind femoral apices; dorsum tectiform, median carina of the pronotum forward distinctly compressed elevated cristate, above substraight from the sulci to the shoulders, then gently concavely sloping backward, substraight on the hind process; humeral angles obtuse; lateral carinae little compressed; prozonal carinae behind the anterior border shortened; posterior angles of the lateral lobes

¹ See Kirby's Cat. Orth., III, 1910.

narrowed, apices hebitate; elytra elongate, widest at the middle, the apices narrowly rounded; wings caudate; anterior and middle femora elongate, compressed, margins below undulate, the middle femora below lobate; pulvilli of the first joint of the hind tarsi spinose, the third longer than the second.

Entire length of male and female 10·8–11·5 mm.; pronotum 8·5 mm.; hind femora 3 8 4 mm.

Habitat.—Hoshangabad, Sept. 14, 1911 (*T. B. Fletcher*); Surat, Bombay, July 8, 1904 (*T. B. Fletcher*). Author's collection.

One example from the former locality is distinctly larger in stature; entire length 13 mm.; pronotum 10·5 mm.; post. fem. 5·3 mm.; the colour obscure ferrugineous, with an elongate black spot on each side of the disc. In structure this example is near typical *tectitergum*. Until a larger series are obtained for study I hesitate to designate this form as new.

This species differs from *subulatum*, Linn., in the cristate median carina of the pronotum, in the slender antennae, in the lobate inferior carina of the middle femora, and somewhat shorter third pulvillus of the hind tarsi.

Genus *Coptotettix*, Bolivar.

Table for separating the Indian species.

1. Elytra very minute; stature very small.
2. Hind process of pronotum acute; median carina of pronotum anteriorly largely elevated, posteriorly pluri-interrupted; dorsum rugose tuberculate, pronotum of male 7 mm. *fossulatus*, Bolivar.
2. 2. Hind process in 3 and 3. 3. rounded-truncate at the apex.
3. Median carina of pronotum percurrent, anteriorly lightly elevated, rounded; posterior femora crassate, bearing a strong triangular antegenicular spine, the superior carina also serrulate; pronotum 3·8 mm. *parvulus*, Hancock.
3. 3. Median carina of pronotum percurrent, little elevated, subsinuate before the shoulders; posterior femora with the apical half slender; pronotum of female 8 mm. *capitatus*, Bolivar.
1. 1. Elytra larger; wings explicate, caudate, or abbreviated.
4. Pronotum with the dorsum deplanate, subsmooth, minutely granose.
5. Frontal costa distinctly sinuate at the median ocellus, arcuate or roundly produced before the eyes.

6. Posterior angles of the lateral lobes with the apices rounded; median carina of pronotum straight, not at all interrupted; wings long surpassing the pronotal apex; pronotum of male 11 mm. *interruptus*, Bolivar.
6. 6. Posterior angles of the lateral lobes little expanded, behind obliquely truncate, apices obtuse; hind process and wings either abbreviated or extended beyond the hind femoral knees, the wings then as long as the pronotum; pronotum between the shoulders bearing two short granulose lines; pronotum of male and female 8-9 mm.; male long-winged form 11 mm. . . *annandalei*, sp. nov.
4. 4. Pronotum with the dorsum deplanate, but with more or less distinct rugulae, or tubercles.
5. 5. Frontal costa not at all or indistinctly sinuate at the median ocellus; roundly or arcuate produced.
7. Dorsum barely subtectiform forward when viewed from behind, elevated forward; median carina percurrent, subdepressed in front of the shoulders, very low subundulate backward; elytra rather large, ovate; pronotum of male and female 11-13 mm. *indicus*, Hancock.
7. 7. Dorsum distinctly convex between the shoulders. lightly granulose-tuberculose, and provided with two short indistinct lineate carinae; backward on the process bearing minute irregular lineate tubercles; pronotum lengthily subulate; posterior angles of the lateral lobes with the apices barely prominent, subtruncate; male and female pronotum 12-14 mm. . . *conspersus*, sp. nov.
8. Posterior angles of the lateral lobes of pronotum obtuse, rounded; pronotum above little rugose; median carina low, little elevated arcuate behind the anterior border, backward irregularly undulate; body coloured grey. palpi white; middle femora of male crassate; pronotum of male 10.5 mm. . . *retractus*, sp. nov.
8. 8. Posterior angles of the lateral lobes triangular, the apices narrowly subtruncate.

9. Dorsum of pronotum little rugose, bearing lineate tubercles; two short carinulae between the shoulders distinctly expressed; colour yellowish-ferruginous; pronotum of male and female 13-14.8 mm. *artolobus*, sp. nov.
9. 9. Dorsum of pronotum distinctly rugose-tuberculose; median carina of pronotum low, pluri-interrupted; hind femora testaceous, four anterior femora fusco-fasciate; the lateral carinae of pronotum maculate with yellow and testaceous; pronotum of female 12.5 mm. *testaceous*, Bolivar.

Coptotettix fossulatus, Bolivar.

Bol., Ann. Soc. Ent. Belg., xxxi, p. 288, 1887; Hanc., Spol. Zeyl., ii, p. 153, 1904.

Habitat.—Balugaon, Puri Dist., Orissa, July 21, 1913 “on lichen-covered rocks” (*N. Annandale*). Ind. Mus. coll.

The type came from Ceylon, and this was the first species described in the genus *Coptotettix* by Bolivar, but the type for this genus was later fixed by Kirby in the selection of *C. asperatus*, Bol., which was figured in Bolivar’s “Essai.” In some respects it resembles in miniature, representatives of the genus *Hyboella*, but for the present I have included it here.

Coptotettix parvulus, Hancock.

Hanc., Mem. Dept. Agric. India, iv, pp. 145, 146, 1912.

Habitat.—Singla, Darjiling Dist., 1500 ft., June 1913 (*Lord Carmichael’s coll.*); Kushtea, Bengal, Oct. 7, 1909 (*J. T. Jenkins*); Sikkim, Darjiling Dist. (*L. Mandelli*); Ca’cutta. Indian Mus. coll. Also: Kobo, “On rotten wood” (*Kemp*); Janakmukh, “Under bark”; Chapra, Bengal (*Mackenzie*). Author’s coll.

Coptotettix capitatus, Bolivar.

Bol., Ann. Soc. Ent. Belg., xxxi, p. 289, 1887; Brunn., Ann. Mus. Genova, xxxiii, p. 111, 1893.

Habitat.—Burma (*Brunner*).

Coptotettix interruptus, Bolivar.

Bol., Ann. Soc. Ent. Belg., xxxi, pp. 291, 292, 1887; Brunn., Ann. Mus. Genova, xxxiii, p. 113, 1893.

Habitat.—Burma.

***Coptotettix annandalei*, sp. nov.**

Colour dark grey, or paler grey sometimes marked with light yellow on the pronotum and hind femora. Head not at all exerted; vertex subequal in width to one of the eyes, slightly narrowed forward, fossulate on each side, not produced: antennae inserted between the lower part of the eyes; paired ocelli placed between the middle of the eyes; frontal costa arcuate produced, distinctly sinuate at the median ocellus. Pronotum anteriorly truncate, posteriorly shortened and acute produced, not at all reaching the knees of the hind femora, or longer subulate, surpassing the hind femoral apices: dorsum deplanate subsmooth, coarsely granulose, with scattered small tubercles, between the shoulders convex; median carina low, forward between the sulci little elevate and rounded crassate, posteriorly little irregularly compressed-elevated; humeral angles strongly obtuse and rounded-depressed; prozonal carinae behind the anterior margin very little expressed and convergent backward; two short carinulae between the shoulders merely granulate lines; posterior angles of the lateral lobes of the pronotum little dilated, obliquely truncate, apices little prominent; elytra elongate, rounded-truncate at the apices; wings extended little beyond the pronotal apex; middle and anterior femora elongate, margins of the middle femora subundulate; posterior femora moderately stout, superior carina minutely serrulate, the antegenicular denticle acute; first joints of the hind tarsi longer than the third, the first and second pulvilli acute spinose, the third longer than the second and flat below.

Entire length of male and female 9-10 (to end of pronotum); pronotum 8-9 mm.; posterior femora 5-6 mm.; male long-wing form 12.5 mm.

Habitat.—Singla, Darjiling Dist., 1500 ft., Apr. 1913 (*Lord Carmichael's coll.*); Northern Shan Hills, Upper Burma (*J. C. Brown*); Calcutta, India. Ind Mus. coll.

Some examples from Calcutta are somewhat smaller in stature than the type from Singla. This species resembles *interruptus*, Bol., in the frontal costa being sinuate at the median ocellus, but differs in the posterior angles of lateral lobes; in *annandalei* they are obliquely truncate, the apices of the angles little prominent, whereas in *interruptus* they are rounded, and the median carina of the pronotum is straighter.

***Coptotettix conspersus*, sp. nov.**

Colour yellowish-ferruginous, subinfusate; vertex narrower than one of the eyes, narrowed forward, not produced, fossulate on each side; frontal costa strongly roundly produced, barely sinuate at the median ocellus. Pronotum truncate anteriorly, lengthily subulate posteriorly, long surpassing the hind femoral apices; dorsum above granose-rugose, and tuberculose backward, between the shoulders convex; median carina of the pronotum

very low forward, but between the sulci barely elevated, posteriorly irregularly undulate; posterior angles of the lateral lobes narrowed, barely prominent, subtruncate; elytra somewhat widely rounded at the apices, subovate; wings surpassing the pronotal apex; anterior femora elongate, margins entire; middle femora in the male little crassate toward the base, the lower carina with the basal two-thirds little dilated, in the female both margins subparallel; hind femoral margins minutely serrulate; first joint of the hind tarsi longer than the third, the third pulvillus longer than the second and straighter below.

Entire length of male and female 13-16 mm.; pronotum 12-14.5 mm.; posterior femora 6-7 mm.

Habitat.—Sibsagar, N. E. Assam (*S. E. Peal*); Bhim Tal, 4500 ft., Kumaon; Siliguri, base of E. Himalayas, Bengal, June, 1906.

This species is somewhat stouter in stature than *retractus*, and the posterior angles of the pronotum more narrowed, subtruncate; on the dorsum of pronotum between the shoulders there are vestiges of two short carinulae, or they are entirely wanting; on the base of process rugose tuberculose, but forward granose.

Coptotettix indicus, Hancock.

Hanc., Mem. Dept. Agric. India, iv, pp. 144, 145, 1912.

Habitat.—Vela, Koyna Valley, Satara Dist., 2100 ft., Apr. 26, 1912 (*F. H. Gravely*). Ind. Mus. coll.

This species has the general appearance of *Hedetettix gracilis*, but with the vertex characters and rugose pronotum of *Coptotettix*.

Coptotettix retractus, sp. nov.

Colour grey; body above granose, sparingly tuberculose; head not at all exserted; vertex subnarrower than one of the eyes, narrowed forward, not advanced quite as far as the eyes, carinula on either side subcurvate, little compressed, open in front, with minute fossa on each side: frontal costa strongly arcuate produced, not sinuate at the median ocellus: antennae inserted between the lower part of the eyes; palpi white. Pronotum anteriorly truncate, posteriorly lengthily subulate surpassing the apices of the hind femora; dorsum granose and scattered with small tubercles; median carina low, behind the anterior margin little compressed-elevated, between the humeral angles depressed, posteriorly pluri-undulate; prozonal carinae behind the front border very lightly expressed, convergent backward; posterior angles of the lateral lobes of the pronotum with the apices rounded, very slightly prominent; elytra widened at the middle, narrowed and rounded at the apices; wings caudate and pale; anterior femora elongate, margins entire; middle femora toward the base crassate in the male, lower margin undulate; hind femora moderately stout, margins entire, granose; hind tibiae pale yellow; first joint

of the hind tarsi longer than the third, the first and second pulvilli acute, the third longer than the second and straighter below.

Entire length of male 12.5 mm.; pronotum 10.5 mm.; posterior femora 5.2 mm.

Habitat.—Pusa, Bihar, Aug. 28 (*T. B. Fletcher*). Author's coll.

***Coptotettix artolobus*, sp. nov.**

Near *conspersus*, but differing in the narrower pronotum, the hind process being very slender subulate; the hind femora not so stout; the dorsum between the shoulders bearing two distinctly expressed carinulae, and backward many minute rugulae; the posterior angles of the lateral lobes of the pronotum distinctly narrowed, minutely obliquely truncate, and as viewed from above the apices little prominent; middle femora in the male very slightly or not at all crassate, the inferior carina very little elevated toward the base; wings caudate; colour yellowish-rufescent or ferruginous.

Entire length of male and female 13–14.8 mm.; pronotum 11.5–13.5 mm.; hind femora 5.2–6.5 mm.

Habitat.—Ceylon. Indian Mus. coll.

***Coptotettix testaceus*, Bolivar.**

Bol., Ann. Soc. Ent. Belg., xxxi, p. 291, 1887; Hanc., Spol. Zeylan., ii, p. 153, 1904.

Habitat.—Chota Nagpur, Pass between Chaibassa and Chakardharpur, Mar. 2, 1913 (*F. H. Gravely*), Ind. Mus. coll. Ceylon (*Bolivar*).

Genus ***Hedotettix***, Bolivar.

Table for separating the Indian species.

1. Median carina of pronotum anteriorly between the shoulders strongly arcuate-cristate, very thin and translucent.
2. Pronotum at the front border distinctly angulate produced over the head *cristitergus*, sp. nov.
2. 2. Pronotum anteriorly not produced over the head, subangulate or truncate.
1. 1. Median carina of pronotum more or less compressed-arcuate forward before the shoulders, higher at the sulci; vertex and front margin of pronotum viewed from above subobtusely angulate, in profile rounded *gracilis*, de Haan.
3. Median carina of pronotum very low, not at all or little compressed; frontal costa strongly produced before the eyes; vertex in profile and viewed from above angulate; front of head oblique *costatus*, Hancock.

3. 3. Median carina of pronotum little compressed, longitudinally low arcuate forward.
4. Dorsum of pronotum between the shoulders subtectiform; frontal costa joined with the vertex in profile strongly arcuate produced; vertex viewed from above subwidened between the frontal carinulae; stature moderate; colour often obscure ferrugineous or infuscate, sometimes with a median light fascia on the dorsum .. *attenuatus*, Hancock.
4. 4. Dorsum between the shoulders distinctly tectiform; frontal costa strongly arcuate produced; blades of the female ovipositor long; the first and third pulvilli of the first joint of hind tarsi subequal in length; stature moderately large; colour grey .. *grossus*, sp. nov.

***Hedotettix cristitergus*, sp. nov.**

Near *punctatus*, Hancock. Obscure yellowish-ferrugineous or somewhat infuscate; body above granulose. Vertex subequal or barely wider than one of the eyes, frontal carinulae formed in obtuse angle, roundly reflexed at the sides, middle carinate; frontal costa strongly advanced before the eyes and arcuate, barely subsinuate at the median ocellus; antennae inserted distinctly between the lower fourth of the eyes. Pronotum anteriorly distinctly angulate produced over the head; median carina strongly compressed, very thin punctate, arcuate forward, the crest highest above or barely behind the shoulders; hind process acute subulate extended beyond the hind femoral apices; prozonal carinae behind the anterior border abbreviated and parallel; dorsum between the shoulders on either side of the crest somewhat smooth; humeral angles obtuse, rounded, carinae little compressed; posterior angles of the lateral lobes narrowed, apices hebitate; elytra oblong, apices widely rounded; wings strongly caudate; anterior femora elongate, entire; middle femora elongate, margins little compressed in the female but subparallel, in the male arcuate dilated towards the base; hind femora elongate, margins entire, minutely serrulate; first joints of the posterior tarsi longer than the third, the first two pulvilli spinose, the third longer, substraight below.

Entire length of male and female 14.5-16.5 mm.; pronotum 10.8-13 mm.; hind femora 6-6.7 mm.

Habitat.—Hoshangabad, Nov. 14, 1911 (*T. B. Fletcher*). Several examples in author's collection.

This species resembles *punctatus*, Hanc. The habitat of the latter is unknown, the type being in the University Mus., Oxford.

***Hedotettix gracilis*, de Haan.**

Acridium (Tettix) gracile, de Haan, Temminck, Verhandel. Orth., p. 167, 1842; *Hedotettix gracilis*, Bol., Ann. Soc. Ent. Belg., xxxi, p. 283, 1887; Hanc., Spol. Zeylan., ii, p. 156, pl. 3, fig. 19, 1904; *Hedotettix abortus*, Hanc., l. c., p. 151, 1904, short-wing form; *Hedotettix festivus*, Bol., l. c., p. 286, pl. 5, fig. 24, 1887; *Hedotettix diminutus*, Hanc., Mem. Dept. Agric. India, iv, pp. 149, 150, 1912.

Habitat.—Calcutta (*N. Annandale*; *C. A. Paiva*; *F. H. Gravely*; *Brunetti*); Madhupur, Bengal, Oct. 14, 1909 (*C. Paiva*) "at light"; Kharagpur, Bengal, June 17, 1911 (*R. Hodgart*); Wellawaya, Ceylon, Nov. 1905; Peradeniya, Ceylon, Nov. 1910; Goalbathan, E. Bengal, July 9, 1909 (*R. Hodgart*); Berhampur, Murshidabad Dist., Bengal, Jan. 1, 1908 (*R. Lloyd*); Basanti F. S. Sunderbuns (*J. T. Jenkins*); Rangoon, Burma, Feb. 26, 1908 (*N. Annandale*); Balugaon, Lake Chilka, Orissa, Sept. 20, 1913 (*N. Annandale*); Marikuppam, S. India, 2500 ft., Oct. 1, 1911 (*F. H. Gravely*). Indian Museum coll. Also: Pusa, Bihar, Oct. 12, 1911 (*T. B. Fletcher*); Hoshangabad, Sept. 14, 1911 (*T. B. Fletcher*); Chapra, Bengal (*Mackenzie*). Author's coll.

This species has been reported from Java and Sumatra.

The stature of *Hedotettix diminutus*, Hanc., l. c., p. 149, 1912, is smaller, yet from a study of the large series of specimens of *Hedotettix gracilis* from India, this species shows a wide range of variation that intergrade into *diminutus*. The latter I reported as found at Surat, Bombay.

***Hedotettix costatus*, Hancock.**

Hanc., Mem. Dept. Agric. India, iv, pp. 147, 148, 1912.

Habitat.—Madhupur, Bengal, Oct. 16, 1910 (*C. Paiva*) "at light"; Nepal, Nov. 21, 1908; Allahabad, U. Prov., Oct. 25, 1910 (*Kemp*); Tirvani, Nepal Terai, Dec. 27, 1909 (*B. Warren*); Monghyr, Bengal, Sept. 23, 1909 (*J. T. Jenkins*). Indian Mus. coll. Also: Bengal, July 26, 1910 (*T. B. Fletcher*); Narainganj, Assam, Oct. 29, 1906 (*C. S. M.—Fletcher*); Chapra, Bengal (*Mackenzie*); Munshiganj, Assam, Oct. 22, 1906 (*C. S. M.—Fletcher*); Durbhanga, Bengal, Jan. 5, 1903 (*T. V. R. A.—Fletcher*) "on grass" and at light. Author's collection.

***Hedotettix attenuatus*, Hancock.**

Hanc., Spol. Zeylan., ii, p. 151, pl. 3, fig. 18, 1904; Hanc., Gen. Ins. Orth. Acrid. Tetr., p. 60, fig. 23, 1906.

Habitat.—Sur Lake, near Puri, Orissa coast, Aug. 19, 1911 (*N. Annandale*; *F. H. Gravely*); Balighai, near Puri, Orissa, Oct. 24, 1908 (*N. Annandale*); Victoria Gardens, Colombo: (*C. Paiva*); Kesbawa, Ceylon, Apr. 1903; Trincomalee, Ceylon, Nov. 1906; Sibsagar, N. E. Assam; Assam-Bhutan Frontier, Mangaldai Dist., N.-E., Dec. 30, 1910 (*Kemp*).

Hedotettix grossus, sp. nov.

Greyish-cinereous; granulose; vertex equal or subnarrower in width to one of the eyes, narrowed forward, frontal carinula convex and subrounded reflexed at the sides; middle carinate; frontal costa strongly arcuate produced. Pronotum anteriorly truncate, dorsum tectiform; median carina low, little compressed, not at all cristate, low arcuate forward, substraight backward; hind process long acute subulate; between the shoulders on the dorsum presenting two abbreviated carinulae; prozonal carinae behind the anterior margin parallel and rather widely separated; posterior angles of the lateral lobes of the pronotum strongly narrowed; elytra rather large, elongate, apices widely rounded; wings caudate; femoral margins entire; first joint of the posterior tarsi longer than the third; the second and third pulvilli equal in length; valves of the female ovipositor long, acuminate, terminating in curvate spines, the margins above and below serrulate.

Entire length of female 16.5 mm.; pronotum 13.5 mm.; hind femora 6.8 mm.

Habitat.—Singla, Darjiling Dist., 1500 ft., May, 1913 (*Lord Carmichael's coll.*). Indian Mus. coll.

Somewhat larger in stature than *gracilis*; the frontal costa more narrowly sulcate; the pronotum anteriorly truncate; the median carina not at all compresso-elevated forward, though little compressed and forming a low longitudinal arc; the ovipositor much longer than in *gracilis*, and the colour grey, with very obscure dark oblique bands on the outer face of the hind femora.

Genus **Euparatettix**, Hancock.

In this genus the representatives have the antennae inserted partly between the lower margin of the eyes; the paired ocelli placed between the middle of the eyes; the vertex narrower than one of the eyes and truncate; the frontal costa rounded or arcuate produced; the head exerted; the body graceful, more or less slender, the pronotum posteriorly lengthily subulate and the wings caudate; the intermediate femora elongate, not at all crassate.

Table for separating the Indian species.

1. Hind tibiae dense black, white annulate just behind the knees; head distinctly exerted; pronotum of male and female 7.5-9.5 mm. *personatus*, Bolivar.
- Slightly smaller in stature, with additional white marking at the apical third of hind tibiae.
var. A. E. p. birmanicus, nov.

1. 1. Hind tibiae subunicoloured, or obscurely marked, but not dense black.
2. Head exerted; pronotum narrow between the shoulders; stature very slender; median carina of pronotum substraight, percurrent; pronotum of male and female 11.5-13.5 mm. *tenuis*, Hancock.
2. 2. Head very little exerted; pronotum moderately dilated between the shoulders; stature more robust; median carina of pronotum arcuate forward, often little undulate before the shoulders, subobliterated just behind the front border; pronotum of male and female 9-11 mm. *variabilis*, Bolivar.
- Stature larger; pronotum of male and female 10-13 mm. *corpulentus*, Hancock.

***Euparatettix personatus*, Bolivar.**

Paratettix personatus, Bol., Ann. Soc. Ent. Belg., xxxi, p. 278, 1887; *Euparatettix personatus*, Hanc., Spol. Zeylan., ii pp. 155, 156, pl. 2, fig. 10 and pl. 3, fig. 20, 1904; Hanc., Gen. Ins. Tetr., p. 55, pl. 3, fig. 32, 1906; Hanc., Mem. Dept. Agric. India, iv, p. 152, 1912; Brunn., Ann. Mus. Genova, xxxiii, p. 109, 1893.

Habitat.—Peradeniya, Ceylon, May 30, 1910; Kandy, Ceylon, July 1909; Calcutta, Oct. 27, 1911 (*F. H. Gravely*); Balugaon, Puri Dist., Orissa, July 21, 1913 (*N. Annandale*); Sigiriya, Ceylon, Aug. 8, 1901; Anuradhapura, Ceylon, "low country," Oct. 18, 1911 (*N. Annandale*); Sibsagar, N. E. Assam (*S. E. Peal*); Berhampur, Murshidabad Dist., Bengal, Jan. 1, 1908 (*R. Lloyd*); Waikam, Travancore, Coastal Region, Nov. 5, 1908 (*N. Annandale*). Indian Museum collection.

The colour pattern in this species varies greatly, and among these examples from Ceylon and India, there are some specimens that agree with the description of the colour as described by Bolivar, namely: "body fuscous, head in front and sides of pronotum cinereous or black." All the specimens have black hind tibiae with a white circular fascia behind the knees, and the antennae are rather long, and the four apical articles are little compressed and black.

***Euparatettix personatus* var. *birmanicus*, nov.**

Besides the above mentioned specimens under *personatus*, there are a number of representatives which are distinguished by the slightly smaller stature, and the hind tibiae has, besides the usual white annulation behind the knees, a little white on the apical third of the black shaft.

Habitat.—Rangoon, Burma, Feb. 26, 1908 (*N. Annandale*); Assam-Bhutan Frontier, Mangaldai Dist., N.-E., Jan. 1, 1911 (*Kemp*).

Euparatettix tenuis, Hancock.

Hanc., Mem. Dept. Agric. India, iv, pp. 151, 152, 1912.

Habitat.—Calcutta, Oct. 1912 (*F. H. Gravely*); Thingannyin-aung to Sukli, Dawna Hills, 900–2100 ft., Nov. 23, 1911 (*F. H. Gravely*); Pusa, Bihar, June 15, 1911 (*T. B. Fletcher*; *Hancock coll.*); Monghyr, Bengal, Sept. 22, 1909 (*J. T. Jenkins*). Indian Mus. coll.

This species can be recognized by the slender and graceful stature, the narrow pronotum, and strongly caudate wings.

Euparatettix variabilis, Bolivar.

Paratettix variabilis, Bol., Ann. Soc. Ent. Belg., xxxi, pp. 276, 277, 1887; *Euparatettix variabilis*, Hanc., Mem. Dept. Agric. India, iv, p. 150, 1912.

Habitat.—Rajshai, E. Bengal, Feb. 6, 1907 (*N. Annandale*); Asansol, Bengal, Nov. 13, 1910 (*Paiva* and *Caunter*); Mandalay, U. Burma, Mar. 12, 1908 (*N. Annandale*); Chotajalla, Rajmahal, Bengal, Feb. 14, 1910 (*B. L. Chaudhuri*); Berhampur, Murshidabad Dist., Bengal, Jan. 2, 1908 (*R. Lloyd*); Puri, Orissa, Jan. 20, 1908; Anuradhapura, Ceylon, “low country”, Oct. 1911 (*N. Annandale*). Ind. Mus. coll.

This species is smaller in stature than *corpulentus*, Hanc., and nearly allied, and it appears from some of the specimens that they cross, producing hybrids.

Euparatettix corpulentus, Hancock.

Hanc., Mem. Dept. Agric. India, iv, p. 158, 1912.

Habitat.—Balugaon, Puri Dist., Orissa, July 21, 1913 (*N. Annandale*); Sur Lake, Puri, Orissa coast, July 19, 1911 (*N. Annandale* and *F. H. Gravely*); Bosondhur, Khulna Dist., Ganges Delta, Aug. 21, 1909, “On launch, at light” (*J. T. Jenkins*); Kalandhungi, Naini Tal Dist., U. P. Agra and Oudh, May 4, 1913 (*R. Hodgart*); Kasara, W. base of W. Ghats, Bombay, Nov. 23, 1901; Balighai, near Puri, Orissa, Oct. 24, 1909 (*N. Annandale*); S. India “On board ship four miles off Tuticorin, May 25, 1908 (*C. Paiva*); Berhampur, Murshidabad Dist., Bengal, Jan. 1, 1908 (*R. Lloyd*); Calcutta: Madhupur, Bengal, Oct. 18, 1909 (*C. Paiva*); Dhappa, nr. Calcutta (*N. Annandale*); Bangalore, S. India (*Cameron*); Purulia, Manbhum Dist., Chota Nagpur, Feb. 10, 1912; Chotajalla, Rajmahal, Bengal, Nov. 14, 1910 (*B. L. Chaudhuri*); Northern Shæm Hills, Upper Burma (*J. C. Brown*); Nepalganj, Nepal Frontier, Nov. 22, 1911. Indian Mus. coll.

Genus *Indatettix*, nov. (*Euparatettix* in part)

Resembling *Euparatettix*, Hancock. Head exserted; vertex strongly narrower than one of the eyes; paired ocelli placed nearly between the lower third of the eyes; antennae inserted just below the eyes; frontal costa little arcuate produced between the antennae, but not above between the eyes as in *Euparatettix*; median carina of the pronotum often undulate, or sinuate, or interrupted; the hind process of pronotum with the lateral carinae toward the apex not at all, or more often, minutely crenulate, or with small dilated lobes. the apex then often minutely subdilated-truncate; middle femora crassate, or the margins undulate; body bearing elytra and fully developed wings. The type is *Euparatettix nodulosus*, Hancock.

Table for separating the Indian species.

1. Hind tibiae white and black biannulate, or bifasciate, more or less intensely pigmented, or white annulate behind the knees, the shaft black or fuscous interrupted with white marking; head distinctly exserted.
2. Stature small; pronotum of female not over 9.5 mm.; body above more or less rugose.
3. Middle femora compressed, margins above and below distinctly undulate lobate; pronotum above rugose; hind femora with the outer face bearing compressed prominent tubercles as viewed from above; median carina of pronotum little cristulate forward between the sulci, depressed between the shoulders and backward strongly sinuate, with small elevated nodes; hind process toward the apex bearing minute dilated-serrulate lobes, the apex often minutely expanded-truncate.

nodulosus, Hancock.
3. 3. Middle femora compressed, margins above and below undulate; median carina of pronotum undulate, the median nodes backwards suppressed or not evident; hind process with the lateral carinae very indistinctly lobate toward the apex *parvus*, Hancock.
2. 2. Stature somewhat larger; pronotum of female 9.5-11 mm.; above plain or little rugose; hind process of prono-

- tum with the lateral carinae toward the apex bearing small more or less dilated lobes, or entire; pronotum light testaceous toward the apex, and often maculate.
- 4 Wings towards the apex dark, often pale maculate.
5. Median carina of pronotum behind the shoulders undulate, bearing obtuse crenules; hind process of pronotum with the lateral carinae toward the apex subentire; anterior and middle femora narrow; pronotum of female 10.6-11 mm. *interruptus*, Brunner.
5. 5. Median carina of pronotum backward behind the humeral angles more or less distinctly nodulose and sinuate; the minute lobes of the lateral carinae towards the apex more or less evident *var. A. aff.*
6. Pronotum above behind the shoulders backward subsmooth; small lobes of the lateral carinae toward the apex more or less distinct; median carina of pronotum backward very low, thin and substraight, barely undulate *var. B. lobulosus*, nov.
6. 6. Pronotum above behind the shoulders little rugose; the small lobes of lateral carinae evident *var. C.*
4. 4. Wings plain, not at all maculate; stature little larger; hind process of pronotum above little rugose, light and fusco-maculate; lateral carinae toward the apex with small serrulate lobes; median carina of pronotum backward subnodulose-sinuate; body pale, variegated with fuscous, legs pale, fusco-fasciate; frontal costa depressed, barely arcuate between the antennae; pronotum of female 11.6 mm. *callosus*, sp. nov.
- 1.1. Hind tibiae subinornate, or sometimes bearing obscure fumate markings, but not distinctly annulate or fasciate with black.
7. Dorsum of pronotum above subsmooth.
8. Head distinctly exerted.
9. Median carina of pronotum percurrent, little compressed-elevated before the shoulders, little sinuate near the anterior border, between the shoulders and backward gently undulate or sub-